Lumepoint

Sub-Surface Laser Engraving, Made Effortless

User Manual

Desktop Edition | Mac & Windows

Version 1.0 | 2026

Contents

SECTION 1

Getting Started

System Requirements

	Mac	Windows
OS	macOS 12 Monterey or later	Windows 10 / 11 (64-bit)
Processor	Apple Silicon (M1+)	Intel Core i5 or equivalent
RAM	8 GB minimum, 16 GB recommended	8 GB minimum, 16 GB recommended
Storage	500 MB free disk space	500 MB free disk space
Internet	Required for activation	Required for activation

TIP

For the best processing performance on Windows, a machine with an NVIDIA GPU will deliver the fastest generation and AI processing times. On Mac, Lumepoint is supported from Apple Silicon M1 onwards, however M1 represents the minimum recommended specification. Newer Mac models with M2 or later chips, or with more than 8 GB of unified memory, will produce noticeably faster results — particularly for background removal, upscaling, and point cloud generation.

Downloading Lumepoint

Lumepoint is available on both Mac and Windows. There are two ways to get started:

Free Trial

1. Visit **www.lumepoint.com** and click **Start Trial**.
2. Enter your email address and submit.
3. You will receive an email containing your trial licence key and links to download the Mac and Windows installers.
4. Save the installer for your platform to your Downloads folder.

Purchase

1. Visit **www.lumepoint.com** and purchase your licence.
2. You will receive an email containing your licence key and links to download the Mac and Windows installers.
3. Save the installer for your platform to your Downloads folder.

TIP

Always download Lumepoint directly from www.lumepoint.com to ensure you have the latest version and a verified installer.

Installing on Mac

1. Open the downloaded **Lumepoint.dmg** file.

2. Drag the Lumepoint icon into your **Applications** folder.
3. Open Launchpad or Finder and launch Lumepoint.
4. If macOS shows a security warning, go to **System Settings > Privacy & Security** and click **Open Anyway**.

NOTE	On Apple Silicon Macs, Lumepoint runs natively and does not require Rosetta 2.

Installing on Windows

1. Locate the downloaded file **LumepointSetup.exe** and double-click to run it.
2. If Windows Defender SmartScreen appears, click **More info** then **Run anyway**.
3. Accept the licence agreement and choose an installation folder (the default is recommended).
4. Click **Install** and wait for the progress bar to complete.
5. Click **Finish**. Lumepoint will launch automatically.

NOTE	You do not need administrator rights to install Lumepoint, but your IT policy may require it. Contact your system administrator if the installer is blocked.

Activating Your Licence

Lumepoint requires a valid licence to operate. Each licence is issued per machine and cannot be active on more than one device at a time.

1. On first launch, enter your licence key when prompted.
2. Click **Activate**. Lumepoint will verify your licence online.
3. Once confirmed, you will land on the main workspace and are ready to go.

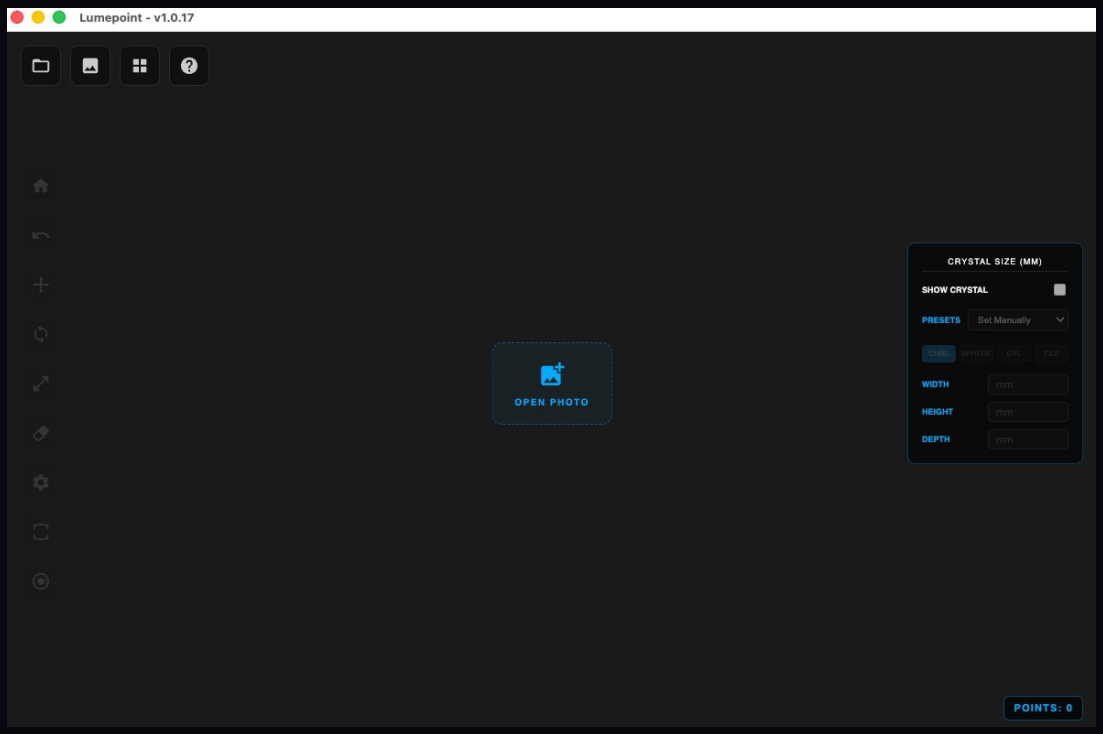
NOTE	If you need to move your licence to a new machine, contact support@lumepoint.com. Your existing licence will be removed and a new one issued for your new machine.
TIP	Your Lumepoint desktop licence is perpetual — you own it outright and will continue to receive updates. Updates are applied automatically in the background and do not require you to uninstall or reinstall the app.

SECTION 2

The Interface

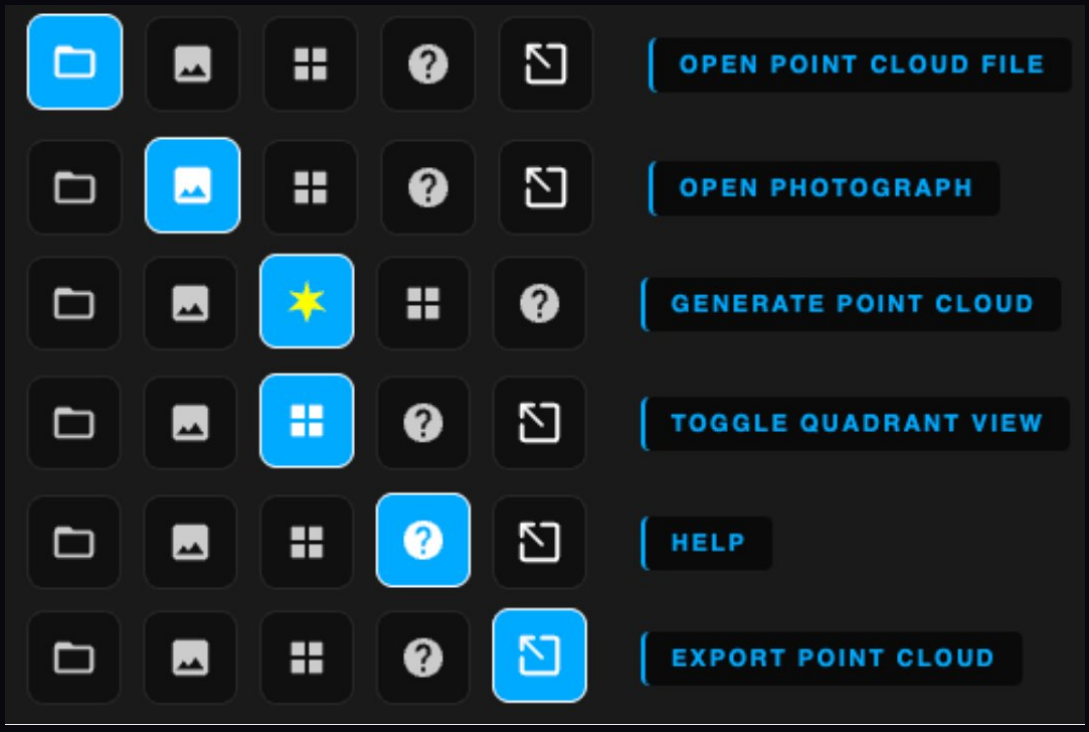
Workspace Overview

The Lumepoint workspace is where you prepare your point cloud for export. The toolbar runs along the top of the screen, giving you access to the main actions. A second toolbar on the left side of the screen provides the transform and editing tools. The Crystal Size panel sits on the right and lets you configure your crystal dimensions. A points counter at the bottom right shows how many points are in your current cloud. You can rotate, pan and zoom the 3D view at any time using your mouse, except when Erase Points is active.



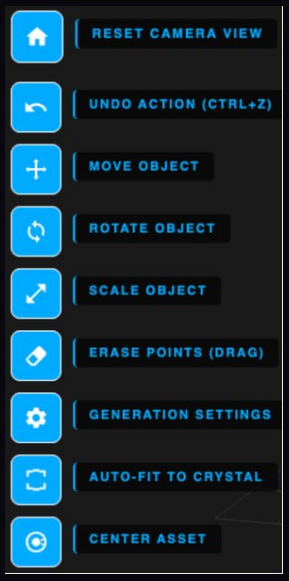
Top Toolbar

The top toolbar gives you access to the main file and view actions. Each button is highlighted below with its label.



Left Toolbar

The left toolbar contains the transform and editing tools. Each button is highlighted below with its label.



Open Point Cloud File

Opens an existing point cloud file for editing or export. Supported formats are GLB, PLY, STL, OBJ and DXF.

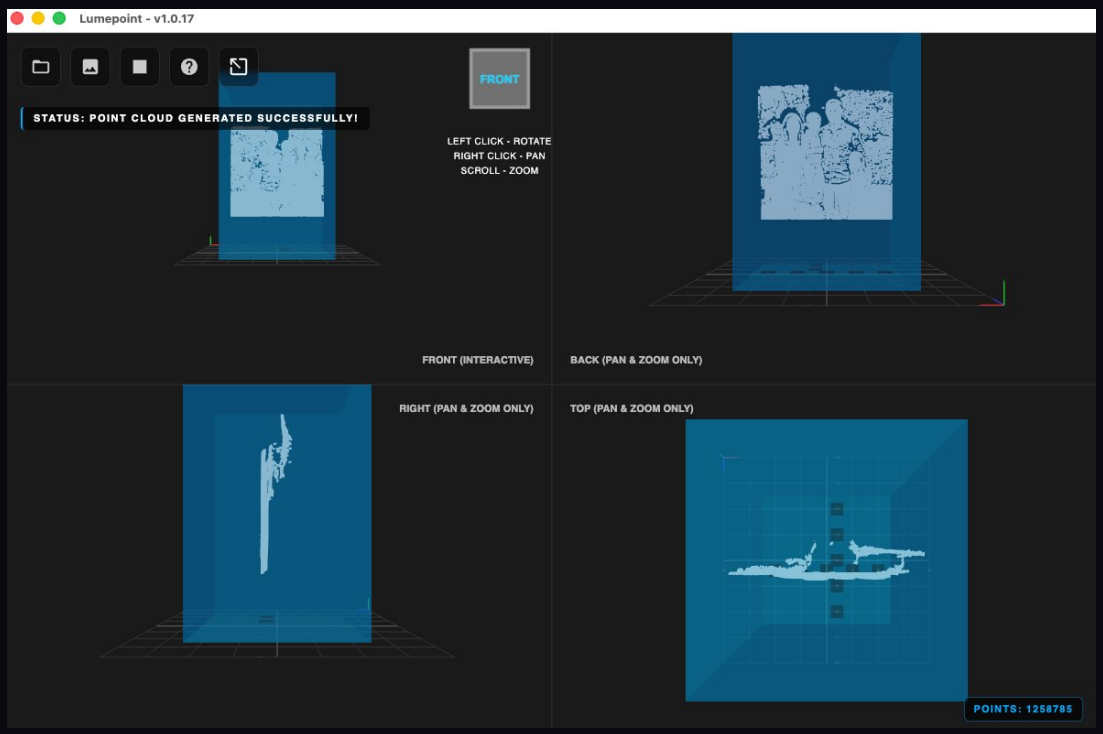
Open Photograph

Opens a photograph to use as the source image for point cloud generation. Supported formats are JPG, PNG and SVG.

Toggle Quadrant View

Splits the workspace into four viewing panels to give you multiple simultaneous perspectives of your point cloud.

1. Top left (Front): fully interactive. You can rotate, pan and zoom.
2. Top right (Back): pan and zoom only.
3. Bottom left (Right): pan and zoom only.
4. Bottom right (Top): pan and zoom only.



Generate Point Cloud

Converts your loaded photograph into a 3D point cloud using the current Generation Settings. This button only appears once a photograph has been loaded — it is not available when working with an existing point cloud file.

Reset Camera View

Resets the camera to the default viewing position. Use this if you have lost your orientation in the workspace.

Move, Rotate and Scale

These three transform controls are always available throughout your session and can be used freely alongside all other features. Use Move to reposition, Rotate to change orientation, and Scale to resize your point cloud within the workspace.

Erase Points

Removes unwanted points from the cloud by dragging a rectangular selection over the area you want to erase. Erase Points must be toggled on before use and toggled off when you have finished. Rotation of the 3D view is disabled while Erase Points is active.

1. Toggle Erase Points on from the toolbar.
2. Click and drag to draw a rectangle over the points you want to remove.
3. Release to erase the selected points.
4. Toggle Erase Points off to resume normal navigation.

Generation Settings

Opens the Generation Settings panel, where you can configure how Lumepoint converts your photograph into a point cloud. See Section 4 for a full description of each parameter.

Auto-fit Crystal

Automatically scales your point cloud to fit within the selected crystal dimensions. This option is only available once you have chosen a crystal shape and size using Show Crystal.

Centre Asset

Centres your point cloud within the workspace. Use this to align your asset before finalising its position. Once centred, you can use Set to Origin to lock the position.

Set to Origin

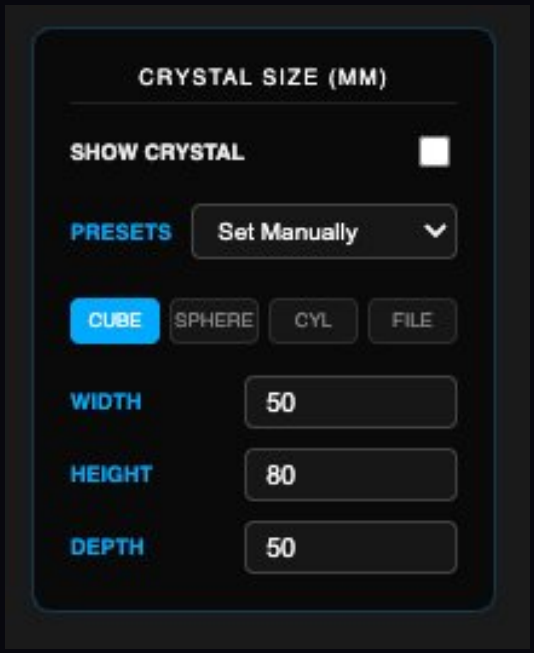
Sets the current position of your point cloud as the origin point. This is used after Centre Asset to confirm and lock the final position before export.

Undo Action

Reverses your last action. Use this to step back through recent changes to your point cloud. You can also use the keyboard shortcut **Ctrl+Z** (Windows) or **Cmd+Z** (Mac).

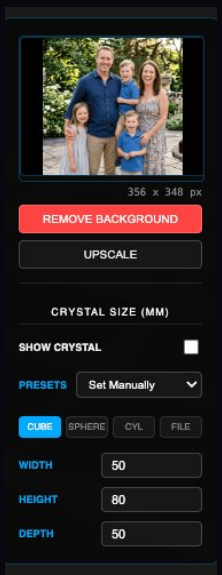
Show Crystal

Toggles an overlay of a crystal shape on the workspace, allowing you to visualise how your point cloud will sit inside a physical crystal. You can choose from a range of crystal shapes and preset dimensions.



Remove Background

Removes the background from your source photograph before generation. This is a non-destructive operation and only affects the photograph as it is used within Lumepoint. This feature is only available when working with a photograph, not an existing point cloud file.



Upscale Image

Enhances the resolution of your source photograph using AI before generation. Higher resolution inputs produce denser, more detailed point clouds. This feature is only available when working with a photograph, not an existing point cloud file.

Export Cloud Point

Exports your finished point cloud in your chosen format. Clicking Export Cloud Point opens a dialogue where you can choose from GLB, PLY, STL, OBJ and DXF. See Section 5 for guidance on which format to use.

Help

Opens the Lumepoint help panel, which contains tips and guidance to help you get the best results from your point cloud generation.

Point Cloud Tips

- **High Contrast:** Ensure your subject is well-lit and stands out from the background.
- **Resolution:** Use high-resolution images (ideally minimum 1000px). If the photo is small, use the Upscale tool.
- **Background Removal:** For cleaner point clouds, use the Remove Background tool before generating.
- **Sharpness:** Blurry photos result in noisy clouds. Keep your subject in sharp focus.
- **Crystal Size:** Set your crystal dimensions accurately to ensure the point cloud fits perfectly.
- **Use Clear Photos of Solid Objects:** Photos of real crystals often have reflections and transparency that can confuse the point cloud generator. Use photos of solid objects with clear edges.

What to Avoid

- **Complex backgrounds:** Cluttered scenes can overpower the subject and reduce clarity.
- **Low-resolution or blurry images:** These can lead to a less detailed point cloud.
- **Shadows / Silhouettes:** Heavy shadows or silhouettes can create unwanted artefacts in the point cloud.
- **Overexposed areas:** Bright, overexposed areas can result in missing data in the point cloud.
- **Incorrect crystal dimensions:** Setting inaccurate dimensions can lead to a point cloud that does not fit your crystal properly.
- **Using photos of actual crystals:** Photos of real crystals often have reflections and transparency that can confuse the point cloud generator.

Crystal Tips

- **Quality Crystal:** Use a UV light to check the purity of your crystal. If it glows it is unlikely to engrave well.
- **Clean Crystals:** Use a micro-fibre cloth to clean your crystal before engraving. Avoid polishes that leave a residue.
- **Test Engrave:** Always do a test engrave on a similar material to dial in your settings before engraving your crystal.
- **Engraving Settings:** Start with lower power and slower speed settings, then adjust based on the results. Each crystal type may require different settings.

SECTION 3

Your First Project

This section walks you through a complete workflow from opening a photograph to exporting a finished point cloud file ready for your laser machine.

Step 1: Open Your Photograph

Click **Open Photograph** in the toolbar and select your source image. Supported formats are JPG, PNG and SVG. The photograph will appear in the workspace.

Step 2: Remove Background (Optional)

If you want to isolate the subject of your photograph before generating the point cloud, click **Remove Background**. Lumepoint will automatically remove the background using AI. This is non-destructive and can be undone at any time. You can skip this step if your image already has a clean background or you prefer to use the full photograph. If you are not happy with the result, you can re-upload your image and try again.

Step 3: Upscale Your Image (Optional)

If your source photograph is low resolution, clicking **Upscale Image** will enhance it using AI before generation, which can improve the density and detail of the resulting point cloud. This step is not required and can be skipped if your image is already high resolution.

Step 4: Configure Generation Settings

Open **Generation Settings** and review the parameters for your project. See Section 4 for a full description of each setting. Once you are happy with your settings, run the generation.

Step 5: Review in Quadrant View

Click **Toggle Quadrant View** to review your point cloud from four angles simultaneously. Use the front panel (top left) to rotate and inspect the result. Use the other three panels to check depth and profile. Use **Erase Points** if you need to remove unwanted areas.

Step 6: Show Crystal and Auto-fit

Click **Show Crystal** and select your crystal shape and preset dimensions. Once a crystal size is selected, click **Auto-fit Crystal** to scale your point cloud to fit within the chosen crystal.

Step 7: Centre Asset and Set to Origin

Click **Centre Asset** to centre your point cloud within the workspace. Once you are happy with the position, click **Set to Origin** to lock it in place.

Step 8: Export Your File

Click **Export Cloud Point**, choose your required format and save your file. Your file is now ready to send to your laser machine via xTool or compatible software. See Section 5 for guidance on export formats.

Not all images are equally suited to point cloud generation. This is not a limitation of Lumepoint — it is the nature of 3D depth reconstruction. The following types of image tend to produce poorer results:

- **Complex backgrounds:** Cluttered scenes can overpower the subject and reduce clarity.
- **Low-resolution or blurry images:** These can lead to a less detailed point cloud.
- **Heavy shadows or silhouettes:** These can create unwanted artefacts in the point cloud.
- **Overexposed areas:** Bright, overexposed areas can result in missing data in the point cloud.
- **Photos of actual crystals:** Real crystals have reflections and transparency that can confuse the point cloud generator.

TIP	For best results, use a front-facing photograph with a clear subject, good contrast, and a simple background. If using the Remove Background tool, a clean, well-lit image will give the most accurate result. Also ensure your crystal dimensions are set accurately before generating — incorrect dimensions will produce a point cloud that does not fit your crystal properly.

SECTION 4

Generation Settings

When Lumepoint converts your 2D image into a sub-surface laser engraving, it first builds a 3D point cloud. That is the structure the laser uses to fire at precise depths inside the glass, creating a three-dimensional image beneath the surface. These settings control how that point cloud is shaped, how dense it is, and how your image is interpreted.

Setting	Recommended Value
XY Distance	0.06 to 0.07 mm
Z Distance	0.06 to 0.07 mm
Blur Radius	0 (default, no blur)
Sharpness Radius	4
Sharpness %	1000
Sharpness Threshold	3
Depth Points %	0.26
Max Gamma	1.7
Min Gamma	0
Max Layers	1 to 6 (recommended: 6 for complex scenes)
XY Jitter	0 (no jitter)
Z Jitter	0 (no jitter)

TIP The recommended values are a great starting point, but the best results come from experimenting with your own designs and glass type.

XY Distance

Controls the spacing between each point in the horizontal and vertical plane. Think of it like the resolution of a grid laid across your image. A lower value packs points more tightly together, giving finer detail in the final engraving. A higher value spaces them out and reduces processing time. Going below 0.06 mm will significantly increase the number of points your laser has to fire, so staying within the recommended range is a sensible starting point.

Recommended: 0.06 to 0.07 mm

Z Distance

Works in exactly the same way as XY Distance, but along the depth axis, controlling the spacing between layers as you move deeper into the glass. The two settings work together to determine the overall density of your 3D structure, so it is worth adjusting them in tandem.

Recommended: 0.06 to 0.07 mm

Blur Radius

Before generating the point cloud, Lumepoint can apply a Gaussian blur to your source image. Zero means no blur. Increasing it softens the image and can help with noise or harsh edges, particularly if your source file has compression artefacts. Use it sparingly, as too much will soften detail you want to preserve.

Recommended: 0 (default, no blur)

Sharpness Radius

The first of four settings that control an unsharp mask filter. Unsharp masking makes your image appear crisper and more defined before it is converted into a point cloud. The Sharpness Radius controls how wide an area around each pixel is considered when sharpening is applied.

Recommended: 4

Sharpness %

Controls the strength of the unsharp mask. A higher value means more pronounced sharpening. The recommended starting value is 1000, which may sound high but is normal for this type of filter. Start at 1000 and adjust up or down based on your results.

Recommended: 1000

Sharpness Threshold

Sets the minimum brightness difference between neighbouring pixels before the sharpening filter activates. Aggressive sharpening can amplify noise in flat areas of your image, so the threshold acts as a gatekeeper, ensuring only genuine edges get sharpened.

Recommended: 3

Depth Points %

Controls how much of the depth range in your scene is included in the point cloud. Zero is the camera position and 1 is the furthest point. A value of 0.26 captures roughly 26 percent of the full depth range, which is useful for trimming away background depth you do not want to engrave. Any value above 1 has no additional effect.

Recommended: 0.26

Max Gamma

Gamma correction controls how brightness and luminance in your image are interpreted when building the point cloud. Max Gamma sets the upper boundary of the gamma range. The recommended maximum is 1.7, which works well for most images. Going higher is possible but can lead to overexposed-looking results.

Recommended: 1.7

Min Gamma

Sets the lower boundary of the gamma range, working alongside Max Gamma. Together they define the luminance range Lumepoint uses when translating image tones into depth information. If your engraving looks flat or lacks contrast, adjusting this range is a good place to start.

Recommended: 0

Max Layers

Controls how many distinct depth layers make up your point cloud. More layers give greater depth perception and a more three-dimensional result. For simpler designs, fewer layers may be sufficient. For complex scenes with a lot of depth variation, pushing towards 6 will give the best result.

Recommended: 1 to 6 (recommended: 6 for complex scenes)

XY Jitter

Introduces a small element of randomness into the horizontal and vertical position of each point, nudging it slightly away from its exact grid position. A value of zero keeps all points precisely on the grid. Adding a small amount makes the engraving look more natural and less mechanical, which works well for organic subjects like portraits or landscapes.

Recommended: 0 (no jitter)

Z Jitter

Works in exactly the same way as XY Jitter, but along the depth axis. Each point gets a slight random nudge deeper or shallower. Combined with XY Jitter, it gives your engravings a more organic, handcrafted quality.

Recommended: 0 (no jitter)

SECTION 5

Exporting Your File

Supported Export Formats

Lumepoint exports point cloud files in five formats. The same formats can also be opened using Open Point Cloud File.

Format	Full Name	When to use
GLB	GL Transmission Format (Binary)	The recommended format for most users. GLB is widely supported by modern UV and green laser engraving software and is optimised for 3D crystal point cloud workflows. If you are unsure which format to use, start with GLB.
PLY	Polygon File Format	A widely supported 3D point cloud format. Use PLY if your laser software does not support GLB, or if you need to open your file in third-party 3D software.
STL	Stereolithography	Primarily used in 3D printing and some CNC workflows. Use STL only if your laser engraver's software specifically requires it — GLB or PLY will typically give better results for crystal engraving.
OBJ	Wavefront OBJ	A standard 3D format supported by a wide range of software, including 3D editing tools such as Blender. Use OBJ if you need to edit or inspect your point cloud externally, or if your laser software requires it.
DXF	Drawing Exchange Format	A CAD-based format used by some professional laser systems. Use DXF if your machine's software is CAD-based or if your production workflow specifically requires this format.

When to Use Each Format

For most users, GLB is the right choice — it is the most widely supported format across modern UV and green laser engraving systems and is purpose-built for 3D workflows. If your laser software does not recognise GLB, try PLY or OBJ as alternatives. If you are working in a professional or CAD-based environment, DXF may be required. When in doubt, check your laser machine's software documentation to confirm which 3D point cloud formats it supports, or contact us at support@lumepoint.com and we will help you find the right format for your setup.

SECTION 6

Troubleshooting and Support

Common Issues

Antivirus Software Interference

Antivirus software will sometimes run a screening on Lumepoint, particularly during point cloud generation. This can make it appear that the app is processing but with a considerable delay. If this happens, open your antivirus software and either confirm or wait for the scan to complete. In some cases you may need to force quit the app and reopen it once the scan has finished.

Antivirus software can also interrupt the automatic update process. If an update appears to stall, check your antivirus software, accept the scan, then force quit and reopen Lumepoint.

Whole Screen Rotates Instead of the Crystal

Some users experience the entire screen rotating rather than just the crystal in the workspace. This is caused by pressing Ctrl+A, which selects all elements. To resolve this, press Esc to deselect, or close the app and restart it.

Generated Point Cloud Appears Very Bright

Some users find their point cloud appears very bright after generation. This is intentional — brightness has been increased to ensure engravings come out clearly, as many samples were not engraving with sufficient contrast. If the brightness feels excessive, try expanding the image in the workspace (this does not affect the final engrave result, even at a large scale). You can also adjust the Generation Settings to find the optimal balance for your image.

Slow Background Removal or Upscaling

Significant wait times on the Remove Background and Upscale Image tools are most common on machines with 8 GB of memory, as these features use AI processing which requires considerable compute power. Both features will still complete successfully. We recommend closing all other applications before running these tools on an 8 GB machine.

Point Cloud Appears Flat with Little Depth

In rare cases, users report that the generated point cloud appears flat with very little depth. This is almost always due to the source image rather than Lumepoint — as noted in the Help section, not all images are suitable for 2D to 3D conversion. For best results, use front-facing photographs with a clear subject, good contrast, and a simple background.

Getting Help

If you cannot find an answer in this manual, the following resources are available.

Resource	Details
Email support	support@lumepoint.com
Support page	www.lumepoint.com/support
Tutorial videos	youtube.com/@lumepoint
Instagram	@lumepointofficial
Reddit	reddit.com/u/lumepoint
Website	www.lumepoint.com
Terms and Conditions	www.lumepoint.com/terms-and-conditions
Privacy Policy	www.lumepoint.com/privacy-policy
Cookie Policy	www.lumepoint.com/cookie-policy

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