

Keepsake3D

Complete user guide

Photo preparation, portrait depth and a dependable export workflow.



Create carefully. Inspect closely. Compare one change at a time.

Windows Crystal Studio 0.29.0 | Guide edition 26 September 2026

Synthetic crystal illustration. Not a photograph of a completed engraving, and not a prediction of results on a particular machine.

PHOTO / CUTOUT / DEPTH / TEXT / EXPORT

Find your next step

Use this guide as a workflow or a reference.

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Start with a copy of your original photo. Save a project before major edits and keep the first export as a comparison. The most useful improvement is often a small change you can see and explain.

Two different products: Flat grayscale photo places your photograph on one plane. 3D portrait relief estimates a front surface from one photograph. Neither creates a complete, measured 360-degree head.

Software suggestions, not machine calibration: The starting values on page 11 are gentle visual experiments. They do not prescribe laser power, frequency, dwell, pulse timing, focus or layer conversion.

Install, try and activate

Start with the complete Windows package.

First launch

1. Extract the entire Windows 24-Hour-Trial ZIP to a folder you can write to. Keep its files and folders together.
2. Run **Keepsake3D.exe** from that extracted folder. The complete package includes the Windows runtime and default offline depth/background models; Python is not required.
3. Open **Version & License** and confirm **0.29.0**. Use this window as the version reference if an older tool-window title appears elsewhere.
4. Load a sample or a photo and explore the interface. When you are ready to test exports, click **Start 24-hour trial** in **Version & License**.

The trial starts only when you explicitly start it. Its 24 consecutive hours include time while the app is closed. Photo and 3D exports work during the trial. After expiry, editing and project saving remain available; activation is needed to resume engraving exports. Keep your computer clock accurate. Reinstalling or updating is not intended to restart the trial.

Purchase and activation

Launch offer: the first 100 customers pay **\$99 USD once**. The standard price afterward is **\$200 USD once**. The purchase includes one year of eligible updates at no additional charge. There is no annual app subscription or automatic renewal. An eligible version remains usable after the included update year ends. Future updates outside that period are optional; their price has not been announced.

1. In **Version & License**, copy the computer's machine code and provide it to the seller.
2. Load the supplied customer **.key** file or paste the complete license key, then click **Activate**.
3. Back up the license file. Activation is verified locally and is tied to that computer; contact the seller when changing machines.

The displayed update date is the end of included updates, not the date the eligible application stops working. Some existing app windows may show the standard \$200 price; use the current official purchase offer for launch pricing. OpenAI API credits are separate from this purchase and trial.

Mac status: 0.30.0 is an unsigned preview for testing. Actual Mac launch, signing/notarization and machine workflow verification remain outstanding. This guide documents the Windows 0.29.0 interface and does not present the Mac preview as a production release.

Learn the workspace

One main workspace, four useful stages.

01

Prepare photo

Crop, tones, cutout

02

Build artwork

Flat photo or relief

03

Inspect carefully

Texture, profile, scale

04

Export and verify

Complete matching set

Area	What you do there
Left: SOURCE PHOTO	Load photo, open Photo editor, optionally use AI Photo Studio, or choose Sample portrait.
Left: CUTOUT	Show photo, remove background, Erase brush, Restore brush, Undo cutout, Redo cutout, Approve cutout, Generate depth.
Center	Compare Point cloud, Crystal tones, Photo surface and Depth map; inspect Front, Side and 3/4 views.
Right: Photo & depth	Choose portrait type, adjust photo and face tones, set final output tones and shape depth. Scroll to see lower controls.
Right: Points & export	Set export facing, create calibration/comparison exports, adjust generated points and crystal dimensions.
Right: Text / All tools	Add lettering; use the broader layout, quality and export controls in All tools.
Top bar	AI Models, Open project, Save project and Version & License.

Understand the update cycle

Most changes need **Reprocess** before you judge the current 3D scene or exported result. **Automatically reprocess edits** can do this after changes settle. Leave it off while making a group of adjustments on a slower computer, then reprocess once.

Generate depth runs the depth-generation stage. **Reprocess** rebuilds the current result with its current photo/depth settings; it does not turn an old low-resolution depth map into a new, more detailed AI estimate.

Use **Save project** at milestones: prepared photo, approved cutout, first depth, final tones and ready to export. A project is your editable master; an export is a handoff to another application.

Preview navigation: drag to orbit, wheel to zoom and right-drag to position the view. Camera movement helps inspection but does not set the exported file's axes. Set those under Export facing.

Choose a photograph that holds detail

Good input usually matters more than stronger processing.



READABLE TONES, RECOGNIZABLE FEATURES

- Soft light across the cheeks and forehead
- Visible eyes, mouth and hair structure
- Clean separation from the background

Synthetic source illustration - not an engraved sample.

Look for these qualities

Choose the largest original you have, with a sharp face and visible eyes, mouth and hair detail. A front or gentle three-quarter view gives a single-photo relief more useful visible information than an extreme profile. Soft, reasonably even lighting is easier to prepare than a bright forehead beside a nearly black cheek.

Keep shoulders or clothing when they help the composition. A simpler background is easier to remove, but inspect the actual subject edges. Glasses, fine hair, jewelry and transparent fabric need special attention. For a group photo, each face must still contain enough useful pixels at the final composition size.

Prefer detail over dramatic contrast

Skin should retain changes in tone across the forehead, nose and cheeks. Dark hair should contain some strands and masses instead of becoming a single black block. Avoid heavy beauty filters, excessive sharpening, messaging-app compression and screenshot copies when the original is available.

Symptom in the original	Better first action
Blurred eyes or small, blocky face	Find a sharper or larger original. Enlargement cannot recover missing anatomy.
White forehead with no tonal variation	Check another exposure/original. Darkening clipped white makes gray, not recovered detail.
Face in deep shadow	Try a gentle shadow/exposure adjustment, then inspect noise before adding contrast.
Strong halo around hair	Reduce existing sharpening if possible; avoid stacking more sharpening.

The illustration above is an example of a synthetic portrait with readable facial tones. It is not an output sample or evidence of achievable engraving detail.

Edit the source photo offline

Crop and orient first; make tonal edits gently.

- 1. Choose **Load photo**, then **Photo editor**. Use **Show before** to compare with the photo at opening, and **Show cutout** to inspect its mask.
- 2. Use **Drag on photo to crop**, select a crop ratio and drag a rectangle. Click **Apply Selected Crop**. Leave useful room around the head and shoulders.
- 3. Use the 90-degree rotation buttons, **Flip H**, **Flip V**, or **Straighten (degrees)** as needed. Straighten supports -15 to +15 degrees; use **Apply Straighten**, then crop transparent corners.
- 4. Adjust **Exposure (EV)**, **Contrast**, **Shadows** or **Highlights** only when needed. **Black & white** is useful for judging facial separation. **Saturation**, **Warmth** and **Sharpen** are also available.
- 5. Click **Apply Adjustments** to commit that adjustment stage within the editor. Use **Undo**, **Redo**, **Reset Adjustment Sliders** or **Reset to Photo at Opening** to compare and recover.
- 6. Choose **Use Edited Photo** to apply to the project. **Save PNG** writes an image copy; **Cancel** leaves the project unchanged. Review the cutout and generate depth again after applying source edits.

Editor control	Supported range / neutral
Exposure (EV)	-3 to +3 / 0
Contrast, Shadows, Highlights, Saturation, Warmth	-100 to +100 / 0
Sharpen	0 to 200 / 0

Upscale only for a clear reason

At the top of the editor, choose **2x** or **4x**, check the displayed output dimensions, then click **Upscale photo**. 2x doubles both dimensions; 4x quadruples them. Each side must remain at or below 4096 pixels. Crop first or choose 2x if an option exceeds the limit.

This is **offline bicubic resizing**, not AI super-resolution. It can smooth enlargement but cannot restore missing eyes, hair or facial structure. A high-resolution original is preferable. More photo pixels do not guarantee more depth-model detail.

Pure upscaling preserves normalized face selection and brush alignment. Crop, flip and rotation change image position and clear those local edits when applied. Save a project copy before changing composition. Previously generated depth must be regenerated.

Make and approve a clean cutout

Keep the subject; remove distractions without carving away identity.

1. Choose **AI Remove Background** to run an installed offline background model. **Plain background** is an alternative for a suitable simple background.
2. Choose **Show photo** and inspect the entire silhouette. Look at hair, ears, neck, shoulders, glasses and the spaces between people.
3. Use **Erase brush** on remaining background and **Restore brush** where the subject was removed. Change **Brush size** for the feature you are working on.
4. Make short passes. Use **Undo cutout** and **Redo cutout** rather than repeatedly painting in the opposite direction.
5. Click **Approve cutout** when satisfied. For a relief, continue with **Generate depth**. For a flat photo, use **Build / update selected type** after selecting that mode.

THREE DIFFERENT EDITS

Cutout

What remains visible

Photo tone

How light or dark it is

Depth

How near or far it sits

What looks best

A clean contour with recognizable hair masses usually reads better than a jagged edge full of background fragments. Retain natural shoulder transitions and avoid slicing off the chin or ear. Inspect at a close view and again at the intended overall composition; tiny edge debris can become distracting when converted to points.

Restoring a broad patch may restore unwanted background as well as hair. Work narrowly around the missing subject edge. A tone brush is a different tool: it lightens or darkens the subject and does not repair its silhouette.

If removal is poor

Try a better source photo before adding more processing. **AI Models** offers model choices and optional downloads. A model that works on one portrait may miss fine details on another; always review its result. If a model is missing, use the model window to locate/select it or install an offered model, then run background removal again.

Approval is your review step. The app's automatic result is not an automatic guarantee that the face, hair or transparent details are correct. Recheck the cutout after applying a new edited or online-generated image.

Set global photo tones

These controls change the photo texture and generated-dot distribution.

Open **Photo & depth**, scroll to **PHOTO TONE**, and start from **Reset photo tone** when you need a clear baseline. These are export-tone controls, separate from the source-editing sliders in Photo editor.

Control	Neutral / reset	How to use it
Photo brightness	100%	Moves overall brightness. Avoid solving a face-only issue by brightening every hair and garment.
Photo contrast	100%	Increases or reduces separation. High values can remove subtle face tones.
Photo gamma / midtones	1.00	Above 1 lightens midtones; below 1 darkens them. Range 0.40-2.50.
Black level	0.00	Raising it removes more dark tones. Range 0.00-0.40. Watch dark hair.
White level	1.00	Lowering it pushes more bright tones toward white. Range 0.60-1.00. Keep 1.00 when highlights already look washed out.
Highlight protection	0.00	Compresses brighter areas. Range 0.00-1.00. Inspect for loss of separation.
Fine detail	0.35	Sharpening, range 0.00-2.00. Reduce it if edges look brittle or noisy.
Local contrast	0.00	Adds local separation, range 0.00-1.00. Use small changes around eyes and hair.

The two gamma controls work in opposite directions

Photo gamma / midtones above 1 lightens. In **FINAL OUTPUT TONES**, **Output midtones above 1 darkens.** Read the full label before adjusting. Start at 1.00 and move one control at a time.

White output limit is also different from White level. Its range is 0.55-1.00; lowering it reduces the brightest final output after face edits and brushes. **Output midtones** ranges from 0.50-2.50. **Reset output tones** returns both to 1.00. These controls affect texture and generated dots, not depth.

Aim for distinct tones in the face, not the brightest possible preview. Once the source or an earlier edit has clipped a highlight to one flat value, later output compression cannot recreate the missing detail.

Correct a white-looking face locally

Fit the oval to skin so hair outside it stays unchanged.

- 1. Open **Photo & depth > Face tones & brushes**. Check **Enable oval tone adjustment** and select the **Face tones** tab.
- 2. Drag inside the oval to move it. Drag the square handles to change width and height. Drag the round handle to rotate it with the head's tilt.
- 3. Drag outside the current oval to draw a new one; drawing a new oval resets its rotation. Keep the boundary inside the hairline where practical.
- 4. Adjust **Oval edge softness**. A higher value spreads the transition farther inward from the boundary. Its range is 0.01-1.00; begin around 0.30-0.50 and inspect the transition.
- 5. Use **Show adjustment mask** to check coverage. Cyan marks the enabled oval; orange marks local brush edits. The overlay is a guide and is never exported.
- 6. Keep **Preserve bright detail** checked. Increase **Reduce skin whiteness** gradually, starting around 0.20, then compare before trying 0.30.
- 7. Toggle **Compare without face adjustment**, which hides oval and brush effects plus overlays. Click **Apply face tones** only when the face improves. **Cancel** discards the dialog changes.
- 8. Click **Reprocess**, inspect **Photo surface** and the actual export texture, then make a fresh export.

Face control	Range	Gentle first comparison
Reduce skin whiteness	0.00-1.00	0.20, then 0.30 if needed
Face contrast	1.00-2.00	1.10-1.20
Deepen facial shadows	0.00-0.50	0.03-0.08
Protect skin highlights	0.00-1.00	0.20-0.35

When first opening with oval adjustment off, the editor offers Face contrast 1.20, shadows 0.08 and highlights 0.35. Review them; they are not a measured calibration. Saved settings may differ. Opening the editor also previews Preserve bright detail; Apply commits it, Cancel keeps the project unchanged.

The oval is manual, not skin detection. Hair inside it changes too. For a bright neck outside the oval, use a small local darkening stroke rather than expanding the oval across surrounding hair. Tone edits do not change the nose or facial depth.

Dodge and burn with soft brushes

Make local changes without moving the whole photo's tones.

Open **Face tones & brushes > Local brushes**. Choose **Lighten brush (dodge)**, **Darken brush (burn)** or **Erase brush edits**. Brushes follow your strokes independently of the oval and respect the removed-background mask.

Control	Range / opening value	Suggested first trial
Brush diameter (% of photo width)	2-30 / 8	4-8 for a cheek-sized area; smaller for a feature
Strength per stroke (%)	1-25 / 8	3-5 for gentle skin work
Brush hardness (0 = soft, 100 = hard)	0-100 / 0	0 for a gradual transition
Zoom	1x-4x / 1x	2x to place a small stroke; inspect again at 1x

1. Begin with one short, low-strength stroke over the exact bright or dark patch.
2. Release the mouse and compare. A stroke's effect is bounded; holding still does not repeatedly accumulate the same tone. A new stroke can strengthen the change.
3. Use **Undo stroke** or **Redo** (Ctrl+Z / Ctrl+Y). **Erase brush edits** moves a painted area toward its original tone. **Clear brushes** removes the brush map and is undoable while the dialog remains open.
4. Toggle **Compare without face adjustment**. Look for halos, muddy skin, changed hair and lost expression.
5. Choose **Apply face tones**, then inspect the exported texture at normal size as well as close up.

Useful corrections

A small darkening pass can reduce an isolated bright cheek or neck. A lightening pass can separate an eye from a shadow if the original retains information. Keep natural differences between lit and shaded sides of the face; uniform gray skin tends to look flat.

Reset face adjustment on the main screen turns off the oval and clears brush edits. Use **Clear brushes** inside the dialog if you want to retain the oval settings. Disabling the oval does not itself erase local brushes.

Zoom helps place edits; it does not increase export resolution. The editor samples more preview detail up to 2x its base resolution, with further zoom magnifying that preview. Brush history is temporary; saved projects retain the resulting brush map, not the undo history.

Gentle software starting settings

Use these as comparison points, never as an engraving recipe.

Begin with your known good project if you have one. Save a copy before testing. Choose only the row matching the visible problem; do not apply every suggestion together. Reprocess, inspect, then keep or undo that single change.

Starting situation	Suggested software baseline / first change	Check before keeping it
Clean, well-exposed photo	Brightness 100%; contrast 100%; photo gamma 1.00; Black level 0.00; White level 1.00. Leave output tones 1.00 / 1.00.	Eyes, mouth, hair and cheek tones remain distinct.
Face too white; hair acceptable	Use the fitted face oval. Preserve bright detail on; whiteness 0.20; face contrast about 1.10. Review existing shadow/highlight values.	Hair outside the oval stays the same; skin has no boundary halo.
Isolated bright cheek or neck	Darken brush; hardness 0; strength 3-5%; diameter suited to the patch. One short stroke.	Expression and soft transitions remain natural.
Overall final texture too bright	Try White output limit 0.95, keeping Output midtones 1.00. If midtones are the issue, compare Output midtones 1.05 instead.	Brighter skin tones remain distinguishable; the whole image is not dull.
Flat grayscale photo	Choose Flat grayscale photo; retain neutral output tones, then make local edits as needed.	A readable image on one plane, with correct cutout and facing.
First 3D relief review	Photo detail relief 0.00 mm; Depth gamma 1.00; Depth curve 0.00; Depth smoothing 0. Retain a modest, fitting Portrait depth.	Nose, brow, cheeks and shoulders form a plausible side profile.
Local depth bump	Edit depth: Smooth, about 10% strength, small brush; one short stroke.	Only the unwanted bump softens; the face retains shape.
Generated-point export	Keep Layers 1 and existing spacing for the first comparison.	Point count, size, facing and receiving-app compatibility are understood.

The numbers above are uncalibrated editing suggestions within the software's supported controls. They are not app-wide defaults or manufacturer settings. Do not infer a laser setting from a software tone, depth or preview-brightness number.

A useful stopping rule

Stop when the face reads clearly at the intended size and further adjustment begins to hide subtle features. Save that project and export one complete new file set. Make a controlled sample with your established machine workflow before changing more variables.

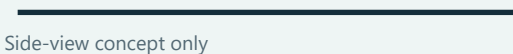
Build a flat grayscale photo

A direct photo treatment on one plane inside the crystal.

1. Load your photo or open a saved project. Edit composition, inspect the cutout and save a copy.
2. In **Photo & depth**, choose **Portrait type > Flat grayscale photo**.
3. Click **Build / update selected type**. An AI depth model is not needed for this mode.
4. Tune **PHOTO TONE**, **Face tones & brushes** and **FINAL OUTPUT TONES** as needed. Rebuild or reprocess after changes.
5. Inspect **Photo surface**, then **Inspect Photo OBJ texture**. Review the face, hair, edges and actual image detail.
6. Set crystal dimensions, composition and **Export facing**. Export **Photo OBJ** or an **Export ComMarker bundle**.
7. Keep the matching OBJ, MTL and PNG together. In the receiving software, verify the photograph, dimensions, placement and which side faces the viewer.

FLAT PHOTO

One plane; image supplies tones



Side-view concept only

PORTRAIT RELIEF

Estimated front surface plus image



Side-view concept only

What flat mode includes

Flat mode keeps the cutout and photo-tone edits on a single zero-relief plane. It ignores depth relief, depth brushes, photo detail relief, portrait layers and added 3D text. The relief settings remain available when returning to 3D mode. If the photo has no usable generated depth, choose **Generate depth** after switching back.

What to verify at import

Zero thickness is intentional. Acceptance of this exact flat Photo OBJ and the receiving application's point generation still need verification on your setup. If the importer rejects a zero-thickness model, record the actual error; do not assume that a file saved successfully was accepted for engraving.

The appearance is carried by the grayscale PNG, not a thick sculpted surface. **STL does not carry those photo tones**. Keepsake3D's point spacing is not embedded in Photo OBJ; the receiving software converts the surface and image using its own settings.

Choose flat mode for a photo on one plane. Choose relief when you want estimated front-to-back portrait shape and added 3D lettering. This flat mode is for a photograph inside crystal, not a surface-marking laser job.

Generate and preserve useful depth

A relief is an estimate of the visible front surface.

1. Prepare the photo and approve the cutout. Select **3D portrait relief** under **Portrait type**.
2. Review the quality/detail choice under **All tools**. Choose **High Detail** when you want to evaluate the available model detail and can accept more processing time.
3. Click **Generate depth**. Wait for completion and inspect **Depth map**, **Photo surface**, **Front**, **Side** and **3/4**.
4. In **Photo & depth > DEPTH SHAPE**, enable **Preserve fine depth in mesh (up to 1036 px)** if you want to retain the available depth detail. Click **Reprocess**.
5. Read the displayed actual depth-map and mesh dimensions. The 1036-pixel limit is a ceiling, not a promise that your photo/model produced that resolution.
6. Save a new project version before making shape edits.

Detail has several limits

The photo, depth model, inference setting and mesh all limit useful detail. Turning on a larger mesh limit does not recover detail from an older low-resolution depth map. Generate depth again with the desired model/detail choice. Larger maps and meshes require more memory and create larger exports.

AI Models provides optional model choices, downloads and resolution settings. Start with the installed defaults. Only select a downloaded model after it is available, then rerun background removal or depth generation as appropriate. Changing a model selection does not rewrite an existing saved depth map automatically. Model downloads require internet; installed model processing runs locally.

Keep shape changes controlled

Portrait depth (mm) sets the relief's depth extent. Choose a value that fits your blank and approved placement; exaggerated depth can make cheeks or noses look unnatural. **Depth gamma** reshapes the distribution of depths, and **Depth curve** changes its contour. They do not edit skin brightness.

Depth smoothing supports 0-3. Start at 0 and compare 1 only if surface noise needs it. **Repair depth spikes** and **Soften depth ridges** are additional corrections; use them for visible problems instead of enabling everything automatically. Inspect again after each change.

Photo detail relief is an artistic addition from photo detail, supported from 0.00 to 0.60 mm. Begin at 0.00; compare a small amount only if useful. Shadows and texture are not measured facial geometry, so stronger values can turn lighting into unwanted surface bumps.

Fix shape, including a recessed nose

Inspect from the side before reaching for Invert depth.

Diagnose the kind of error

A nose that looks dark from the front may only be a photo-tone issue. Rotate to **Side** or **3/4** and inspect **Depth map**. In the depth editor, light means closer. Decide whether the whole portrait depth is reversed or whether one small region is wrong.

Invert depth reverses the global depth ordering. Use it only when the entire relief is backward after confirming the intended front direction. If the overall face is sensible but the nose is recessed, use a local depth correction. Changing export facing rotates the model; it does not correct wrong anatomy.

Use depth brushes

1. Save a project copy. Open **Photo & depth > Edit depth - brushes** (the button uses a dot separator in the app).
2. Choose **Raise**, **Lower** or **Smooth**. Raise moves a region toward the viewer; Lower moves it back; Smooth softens local bumps.
3. Set **Brush diameter (% of image)** and **Strength (%)**. Diameter supports 1-25 and strength 1-100. The opening values are 6 and 25; for a delicate correction, first compare a lower strength around 10.
4. Paint on the left image. For a recessed nose, try one short Raise stroke centered on the needed area, keeping the brush narrow enough to avoid lifting both cheeks.
5. Inspect the point-cloud view from **Front** and **Side** after the stroke. Use **Turn** and **Tilt** to check transitions.
6. Use **Undo stroke** / **Redo stroke** (Ctrl+Z / Ctrl+Y). **Reset brush edits** removes brush corrections while preserving global depth settings; Undo can restore them while the editor is open.
7. Choose **Apply depth edits**, reprocess and inspect the main scene. **Cancel** discards the dialog changes.

Keep likeness, not just projection

A raised tip with an abrupt rim can look less natural than a modest correction. Use a slightly wider, gentle Smooth pass around a transition only if needed. Review brow, lips, chin and shoulders together; a plausible side profile matters more than making every feature protrude.

Depth edits preserve the photo tones and cutout. Face-tone brushes preserve depth. Use the tool corresponding to the problem. Saved projects retain depth corrections; brush undo history lasts while the editor is open.

Fit the blank and add lettering

Size and spelling deserve the same review as the face.

Set dimensions and composition

Use **Points & export > Custom crystal dimensions** to enter **Width (mm)**, **Height (mm)** and **Thickness (mm)** for the real blank. Broader portrait layout and size controls are in **All tools**. Match the actual dimensions and leave the internal placement/margins required by your machine and material workflow.

Fit the full portrait when preserving the head and shoulders matters. Fill/crop controls can use more of the available area but may remove edges. Review the result after adding lettering, since portrait and text must fit together. Use the final export report and the receiving software to confirm actual bounds.

Add a name and message

- 1. Open the **Text** tab. Choose **Portrait + name** or **Portrait + name + message**. **Portrait only** excludes lettering.
- 2. Enter each line and select its font. Choose **Bold**, **Italic**, or both independently for the name and message.
- 3. Enter **Name height (mm)** or **Message height (mm)**. Press Enter or move focus to commit a typed value. Sliders support 0.1 mm steps.
- 4. Select **Below portrait** or **Above portrait** for each line.
- 5. Click **Update text in 3D preview** or **Reprocess**. Check spelling, spacing, clipping and balance at the final scale.

Setting	Supported range	What the number means
Name height	1-10 mm	Target lettering height, not font points.
Message height	1-8 mm	Independent from the name; long text may shrink to fit.
Bold / Italic	Each line independently	Changes actual lettering geometry and generated points.

What tends to read well

Short lines, clear fonts and sufficient size are easier to judge than dense phrases. Long text automatically reduces to fit the crystal width, so the typed height may not be the final visible height. Thin italic strokes and elaborate scripts can lose clarity at small sizes. Font availability and style rendering depend on installed Windows fonts.

The text sample is displayed at a convenient screen size. Inspect the actual 3D preview and exported model for final scale. **Flat grayscale photo mode omits added 3D lettering**, even when text remains entered in the project.

Inspect the result you will hand off

Use each preview to answer a different question.

View / tool	What it helps you judge	What it does not prove
Photo surface	Grayscale texture on the portrait surface.	The exact points another program will generate.
Depth map	Estimated depth and local shape corrections.	Measured anatomy or physical brightness.
Point cloud	Keepsake3D's generated dots for PLY / XYZ / DXF.	ComMarker's Photo OBJ sampling.
Crystal tones	A softer display of overlapping generated points.	A calibrated prediction of glass or engraving.
Front / Side / 3/4	Likeness, profile, depth envelope and text placement.	The exported file orientation unless explicitly checked.
Preview brightness	A comfortable inspection display.	Export brightness, laser energy or a tone correction.

Check the exact Photo OBJ texture

1. Click **Inspect Photo OBJ texture** above the right-hand tabs. Pending edits are rebuilt first.
2. Use **Fit, Pixel 1:1**, minus/plus and the scrollbars. Inspect the forehead, cheeks, eyes, mouth, hair and cutout boundary.
3. Read the photo resolution, depth grid, mesh counts, mapped pixels/mm and final model dimensions in the selected orientation.
4. Use **Save exact export PNG** if you want a separate image for review. It is the atlas used by a fresh Photo OBJ.
5. Export a fresh complete OBJ/MTL/PNG set after your final changes. Do not pair a new OBJ with an old texture.

The narrow strip on the right of the saved atlas contains padding and a white lettering swatch. It is not mapped across the portrait and is not a vertical blemish in the face.

A quick quality gate

Can you identify the person at the intended size? Are skin tones separated? Does hair retain structure? Is the side profile plausible? Are the cutout, text, dimensions and facing correct? If yes, save a named project and proceed to a controlled import check.

A beautiful preview is an artwork check. A successful file import and a sample on the actual machine/material are separate checks.

Choose the right export format

The file format decides what information reaches the next application.

Export	Contains	Best use / limit
Photo OBJ + MTL + PNG	Portrait surface geometry, material references and tuned grayscale photo texture; enabled relief lettering.	Photo-textured import workflows. Keep all companion files together. The receiving program generates its own points.
ComMarker bundle ZIP	A packaged Photo OBJ handoff and supporting files/instructions.	Extract the whole bundle before importing. A ZIP is not a ready-to-run laser job.
PLY / XYZ	Generated point positions, including enabled text and portrait layers.	Software that accepts the relevant 3D point format. Tones are represented by dot distribution, not a photo texture.
DXF	ASCII 3D POINT entities in millimeters.	A point-cloud importer that preserves Z. General 2D DXF support is insufficient.
STL / GLB	Shape-only mesh in this application.	Mesh workflows. They do not carry the Photo OBJ grayscale photograph.
Project .k3dproj	Editable photo, cutout, settings and available depth/corrections.	Continue work in Keepsake3D. This is not the engraving-software handoff.

Before saving

Choose **Export facing**, reprocess pending edits, inspect the result and check the chosen format. Exporting requires an active trial or valid license. Use **Export Photo OBJ**, **Export generated points**, or the destination workflow in **All tools**, according to what the receiving application actually accepts.

Read the companion **.setup.txt** report. It describes the exported format, millimeter units, orientation, dimensions/bounds and applicable texture or point information. Match these in the receiving software rather than judging scale from an auto-fitted screen view.

No export contains laser power, speed, focus or pulse commands. A machine profile selects an export path and file orientation behavior; it does not establish hardware compatibility or turn the file into a calibrated machine job.

If a portrait imports as an untextured shape, fix the Photo OBJ file set or texture import. Switching to STL discards the photographic information needed for the photo workflow.

Hand off Photo OBJ to ComMarker

Preserve the photograph, then verify the receiving program's conversion.

1. Finish the photo, cutout, depth or flat mode, text and dimensions. Click **Reprocess** and save the project.
2. Set **Points & export > Export facing**. If you select an export destination under All tools, review facing again because some profiles apply a default.
3. Choose **Export Photo OBJ**, or **Points & export > COMMARKER HANDOFF > Export ComMarker bundle**.
4. If using a bundle, extract every file into one folder. Keep the OBJ, MTL and PNG together with their original matching names.
5. In ComMarker Studio, import the **OBJ**. Confirm **Texture Image** is enabled and the photograph appears on the model. Check missing MTL/PNG files if it looks plain.
6. Compare crystal dimensions, model bounds, scale and orientation with the **.setup.txt** report. Confirm the side intended for viewing and the reading direction of any text.
7. Inspect **ComMarker's generated-point preview** before assessing a physical sample. Save its conversion settings and a preview image alongside the matching export set.
8. Use the manufacturer's procedure and your established machine/material setup for the sample. Compare under consistent viewing and lighting conditions.

Understand which program controls which result

Keepsake3D supplies the tuned photo and surface. ComMarker creates its own points from that input. Changing Keepsake3D's **Point spacing**, **Layers**, **Layer spacing**, **Layer tone** or **Stagger layers** does not transfer those settings through Photo OBJ.

The official ComMarker OBJ guide describes retaining OBJ, MTL and texture files and checking the imported model. It is an import reference, not evidence that this exact export has been validated on your machine. [1]

Pulse labels and machine settings

Use the exact units and definitions documented for your laser model and software version. A field labeled in microseconds must not be converted to a presumed nanosecond laser pulse based on a generic chart or another machine's screenshot. Confirm ambiguous pulse/timing fields with ComMarker for that software and hardware combination.

The guide supplies no laser-energy or timing preset. Preserve your known settings while changing one artwork variable. Record machine settings with their displayed units; a clean texture or successful import alone cannot certify the physical result.

Facing and generated-point workflows

File rotation, image mirroring and depth reversal are different operations.

Export facing	File axes	Intended distinction
Original photo axes - front +Z	Y up; front +Z	Matches the original photo-oriented axes.
Upright - front -Y	Z up; front -Y	Upright rotation; no scale change or image mirror.
Opposite upright - front +Y	Z up; front +Y	Opposite upright direction by rotation, not mirroring the photo.

Camera orbit does not rotate exports. **Invert depth** reverses depth values rather than choosing a viewing direction. Always check an asymmetric feature or readable text in the receiving program so a facing error is visible.

Export actual generated points

1. In **Points & export**, inspect **Point cloud** from Front and Side. Start with **Layers 1** and the established point spacing.
2. If testing additional layers, change one setting at a time. Layers support 1-6; layer spacing supports 0.04-0.30 mm, with 0.06 as its opening value. More layers can increase brightness and obscure detail.
3. **Layer tone / deeper shadows** above 1 deepens shadows; below 1 fills more midtone dots. **Stagger layers for finer sampling** offsets sampling. These are experimental point controls, not Photo OBJ conversion controls.
4. Click **Reprocess**, then **Export generated points**. In the Save dialog choose PLY, XYZ or **DXF 3D points**.
5. Verify imported point count, full 3D coordinates, dimensions and facing. Keep the companion setup report. If a cloud is too large, increase point spacing or reduce layers and compare again.

Other export destinations

Under **All tools**, select **Export destination** and use **Export for Selected System**. ComMarker and xTool profiles use the upright default; generic PLY/XYZ/STL profiles use original photo axes. DXF and the V5 test profile retain the selected facing. Review it after selecting a destination.

xTool documents PLY for F2 Ultra UV inner engraving; this does not prove this particular export has been hardware-tested. [2] **Sculpfun V5 / SGD Laser - Photo OBJ (test import)** is an evaluation path, not certified V5 support. Sculpfun documents OBJ/STL in its crystal workflow; exact import, facing and hardware results still require testing. [3] V5 3D DXF point import remains unconfirmed.

Test grayscale before chasing settings

Use a repeatable reference to see which tones remain distinct.

1. Open **Points & export > Export calibration test**. A portrait is not required.
2. Extract the entire test ZIP. Read **START-HERE.txt** and import **Grayscale-test.obj** with its MTL and PNG beside it.
3. Confirm the texture loaded and compare the documented dimensions. The design contains eleven 4 x 4 mm patches with 1 mm gaps, overall 29 x 9 mm.
4. The model includes a shallow 0.2 mm slope to avoid zero-thickness bounds. Its Z-up exported size is X 29 x Y 0.2 x Z 9 mm. Check placement against your blank and manufacturer procedure.
5. Use **Reference.png** to identify patches; its labels are for reference and are not engraved. Record your observations in **Results.csv**.
6. Use the same machine/material setup and viewing conditions for comparisons. Record which neighboring tones can be distinguished and where tones merge.

ELEVEN REFERENCE TONES



Diagram only. Use the exported test bundle for its actual dimensions and texture.

What the test tells you

If several bright patches appear the same, compare gentle output-tone compression in the portrait and see whether meaningful facial differences survive. If dark patches disappear, first verify texture/conversion behavior and the established material setup. The chart is evidence, not an automatic diagnosis of one cause.

The app does not yet convert recorded chart results into a measured compensation curve. **White output limit** and **Output midtones** are manual tone controls. They do not choose laser parameters or calibrate crystal brightness.

Keep a useful comparison record

Record the date; app and machine-software versions; blank dimensions/material; import scale/facing; all conversion and machine settings with displayed units; the exported file set; and observations under consistent lighting. A phone photo is useful only when lighting, angle and exposure are reasonably comparable.

Change one variable per comparison and preserve the previous result. If you change tones, depth, point conversion and machine timing together, an improvement or failure cannot be attributed to one of them.

Find where horizontal bands begin

Separate image artifacts, depth conversion and the physical result.

First identify the stage

1. Inspect the source photo and **Inspect Photo OBJ texture** at Pixel 1:1. If bands are already in the PNG, investigate the source and tone/detail processing first.
2. If the PNG is clean, inspect the receiving software's generated points with the exact same file set. Record whether bands first appear there.
3. If both are clean but the finished crystal has bands, preserve those inputs and investigate conversion/physical-process factors with the manufacturer. Preview cleanliness does not identify one hardware cause.

Use the matched comparison export

Open **Points & export > COMMARKER HANDOFF > Export banding comparison** and extract the ZIP. It contains two complete Photo OBJ file sets:

Folder	What changes
A-current-surface	Your current relief and its surface normals.
B-flat-depth-reference	The identical photo on a plane, keeping silhouette, facing and lettering; only portrait depth and normals differ.

The exporter verifies identical PNG hashes and includes a settings snapshot and comparison guide. Import each OBJ separately with Texture Image enabled. Keep scale, facing and conversion settings matched. Do not allow the flat reference to be auto-fitted differently from the relief.

Observation	What it suggests / next check
Bands only in A	Depth or depth-to-layer conversion is a useful next suspect. Review the profile and conversion behavior; this is not proof of one cause.
Bands in A and B	Shared texture, conversion and physical-process factors remain possible. Check the stage where they first appear.
Bands in the PNG itself	Review source pixels and photo processing before machine changes.
Bands only in the finished sample	Preserve clean previews and matched settings for a controlled machine/material investigation.

Keep the exact OBJ/MTL/PNG sets, setup reports, generated-point previews and observations. Photo OBJ does not inherit Keepsake3D's point spacing or portrait-layer settings, so changing those is not a direct fix for ComMarker Photo OBJ bands.

This comparison helps narrow the problem. It does not promise that banding is fixed, that one cause is established or that an engraving is calibrated.

Use online AI only when you want it

Offline editing, installed models and licensed exports remain available.

AI Photo Studio is optional. It uses your own OpenAI API key and an API account with required access and billing. OpenAI bills your account directly. Keepsake3D adds no AI subscription, credit plan or usage charge. A ChatGPT subscription is separate from API billing. [4]

1. Open **AI Photo Studio** in SOURCE PHOTO. Choose **Edit current photo** or **Generate a new image**. Generation can begin without a loaded photo.
2. Paste the key into **YOUR OPENAI API KEY**. Never put it in a prompt, screenshot, shared project or message to the seller.
3. Choose **Check connection (no image)** if needed. This sends no photo or prompt and generates no image. It checks model lookup; it cannot prove image permissions or sufficient credit.
4. Review the image and prompt. Choose output size, quality and background settings. Higher output size/quality can cost more. Avoid promising a price until the current provider price is checked.
5. Click **Send to OpenAI (paid)** only when ready for a billable request. Edit sends the current cutout and prompt; Generate sends the prompt. Opening the window does not upload your photo.
6. Compare source and result. Inspect likeness, eyes, teeth, mouth, hair, clothing and edges. AI can change identity details or invent texture.
7. Choose **Save result PNG** or **Use this photo**. Review and approve the new cutout, then regenerate depth. **Undo Photo Edit** can restore the previous photo/model when available.

A useful editing prompt

"Prepare this portrait with gentle, even lighting and readable grayscale facial tones. Preserve the person's identity, expression, eyes, mouth, hairstyle and clothing. Keep natural skin detail. Avoid harsh sharpening and blown highlights."

Review the result even with an identity-preserving prompt. Use an original photo instead when an AI result changes likeness.

Privacy, cost and failures

The key stays in the window and is cleared when it closes; it is not saved in projects. Review OpenAI's current privacy/data terms before sending private photos. Fully erased background RGB is removed from the upload; soft edge pixels remain. Canceling after Send can stop waiting while the provider still processes and bills the request. The app does not automatically retry.

For a failure, read the specific message and check API billing, model access or verification as appropriate. Share only the error text when requesting help, with the key hidden. Source upload is limited to a 14 MiB PNG and 4096 pixels per side.

Save, update and recover

Keep editable masters and complete export sets together.

A simple file habit

Use **Save project** for a named .k3dproj at each major stage, for example Portrait-01-cutout, Portrait-02-depth and Portrait-03-final. Use **Open project** to resume. A project preserves the photo, mask, settings, available depth and applied local edits; temporary view state and dialog undo history are not a substitute for saved copies.

Keep the original image, project, final export set and receiving-software settings in the same job folder. Save separate copies before new source edits, changing models or opening work in a newer version. Newer project features may require newer app versions; do not overwrite your only rollback copy.

Install a Windows update

- 1. Close Keepsake3D. Extract the whole **One-Time-License-Update ZIP**.
- 2. Run **INSTALL.cmd** and select **Keepsake3D.exe** in the existing complete app folder.
- 3. Reopen that app and confirm **0.29.0** under **Version & License**.
- 4. Keep the installer's verified backup. Its **RESTORE.cmd** returns to the previous build if needed.

Do not run the executable inside the update package's **files** folder; it lacks the complete runtime. The updater reuses installed models, projects and activation. Back up your own projects independently.

Problem	First useful check
Changes appear to do nothing	Click Reprocess; check whether you are viewing Photo surface, points or a depth map, and whether the mode uses that control.
No export after trial	Open Version & License; activate an eligible license or confirm trial status. Editing/saving remains available.
Model missing or inference fails	Check AI Models and installed model selection. Try the available CPU option if the accelerated route fails.
App seems busy with a large project	Wait for the operation; reduce detail or point layers for a comparison if memory/file size is excessive.
Texture missing after import	Extract all files; keep the matching OBJ, MTL and PNG together; verify Texture Image.
Lettering is absent	Choose a layout with text, leave flat-photo mode, reprocess and inspect actual geometry.
Different facing than expected	Review Export facing after destination selection; camera rotation is not export rotation.

When requesting help, provide app/software versions, the exact error and steps to reproduce. Share only a photo or project you have permission to share. Remove API keys and license secrets from screenshots.

Final review and reference

Make the handoff repeatable.

Before your next sample

- Save an editable project and retain the original photo.
- Confirm flat-photo or relief mode, clean cutout and readable facial tones.
- Inspect the face at normal size and Pixel 1:1; inspect relief from Side and 3/4.
- Check text, crystal dimensions, model bounds, scale and export facing.
- Export a new matched set. Keep OBJ, MTL and PNG together for Photo OBJ.
- Confirm the texture and generated points in the receiving software.
- Preserve known machine settings and their displayed units. Change one variable for the next comparison.
- Record the result under consistent viewing conditions and save the file set that produced it.

Terms used in this guide

Texture: the grayscale photograph mapped to a surface. **Depth map:** an estimate of how near or far each visible region is. **Relief:** the resulting front surface with depth. **Point cloud:** positions of generated dots. **Facing:** the exported model's orientation. **Reprocess:** rebuild the result with current settings. **Calibration test:** a reference design for comparison, not automatic hardware calibration.

Readable references

This guide was checked against the Windows Crystal Studio 0.29.0 controls and accompanying release guides. Suggested starting values are editorial examples within those controls, not validated physical presets. The launch offer and one-time purchase terms are the product's stated offer for this edition.

[1] **ComMarker - 3D Inner Glass Engraving File Format Guide (OBJ vs STL).** Official file-set and import guidance. <https://blog.commarker.com/archives/55550>

[2] **xTool - Inner Engraving File Types for xTool F2 Ultra UV.** Official format reference. <https://support.xtool.com/article/2716>

[3] **Sculpfun - V5 software tutorial: SGD Laser.** Official crystal-workflow reference; this guide does not certify this export or V5 point-file compatibility. <https://wiki.sculpfun.com/?p=558>

[4] **OpenAI - Managing billing for ChatGPT and the API platform.** Separate billing systems. <https://help.openai.com/en/articles/9039756-managing-billing-for-chatgpt-and-the-api-platform>

References accessed 26 September 2026. Use current manufacturer instructions for the specific machine and software version. Contact the seller for licensing and application support; contact the relevant manufacturer for machine setup and ambiguous timing units.