



# FRAX3D

## 3D Fractal Visualizer — Complete User Guide

Version 261 · Live VJ visuals, one-click music videos, deep fractal control

**36**

fractal types

**8**

music genres

**4K**

max export

**BPM**

beat-synced

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# 1 · Getting Started

## What is FRAX3D?

FRAX3D is a real-time 3D fractal visualizer built for electronic music. It runs entirely in your browser using WebGL — no installation required. It has three main uses: **live VJ performance** (fullscreen visuals reacting to audio), **music video creation** (export a finished MP4/WebM with your track embedded), and **generative art exploration** (36 fractal types, every parameter exposed).

Two builds share one engine: the **FRAX3D Player** — a zero-setup viewer with genre buttons and quick effects, made for listening — and the **Full App** with the complete control panel, export, keyframes and MIDI. Pick either at [frax3d.com/start.html](https://frax3d.com/start.html); everything you learn carries over.

## Launching

**Web:** visit [frax3d.com](https://frax3d.com) and press **Start free**, then choose Player or Full App. On phones the app enters fullscreen automatically after the intro. **Desktop download:** unzip the package and double-click **Open-FRAX3D.cmd** (Windows), or open the HTML file in Chrome/Edge.

## Install as an app (PWA)

FRAX3D installs like a native app — its own icon, no browser bars. On Android/Chrome tap the **Install app** button on the site (or browser menu → Install). On iPhone/iPad: Share → **Add to Home Screen**. The installed app works offline after the first load.

The install prompt and some features (microphone reactivity, screen wake lock) require the site to be served over HTTPS.

## Your first session

1) Press **Begin your 3D trip** — the first run shows “Building shaders...” for a few seconds while your GPU compiles the visualizer (this is cached, so it only happens once per version). 2) Autopilot and Audio reactive are already on. 3) Load your music with the folder button in the music bar — single files, multiple files, or an M3U playlist. 4) Press **Visualizer mode** for fullscreen. 5) Found a look you love? Save it in the Presets tab.

• Tip: the screen stays awake while the visualizer runs — like a video player — so it doubles as a living screensaver at parties.

## 2 · Interface Overview

### Canvas

The main area is the live WebGL canvas. Interact directly with mouse or touch:

<b>Drag</b>	Rotate the camera around the fractal (1-finger drag on touch)
<b>Scroll / pinch</b>	Zoom in and out
<b>Shift+drag</b>	Move the focus point (2-finger drag on touch)
<b>Double-click / tap</b>	Reset the view &mdash; works on mouse and touch

### Music player bar

The persistent music bar shows **cover art, title and artist**. Controls: previous, play/pause, next, stop, and the folder button for loading your own audio.

**Local files & playlists:** the folder button accepts audio files (MP3, WAV, FLAC, OGG, M4A, Opus...) and M3U / M3U8 playlists. Because browsers cannot open files listed inside a playlist by path, select the playlist together with its audio files in the same picker — FRAX3D matches them by filename and plays in playlist order. Web links (http/https entries) in playlists stream directly.

**Tags & artwork:** FRAX3D reads each file's ID3 tags — proper title, artist, and the embedded cover art appears in the music bar automatically.

### Control panel & tabs (Full App)

Visualizer · Fractal · Blend · Presets · Camera · Colors & Light · VJ FX · Quality · Keyframes (Pro) · Export · MIDI (Pro) · Help. On phones the panel collapses behind a toggle; during export it hides entirely.

## 3 · Visualizer Tab — Genres, Autopilot & Beat Sync

### Genres

Each genre is a curated aesthetic: palettes, motion, grading and reactivity tuned together.

<b>Ambient</b>	Slow breathing drift. No hard cuts &mdash; scene changes swell in with a soft light pulse.
<b>Chill-out</b>	Warm, clean colours, gentle motion &mdash; mellow without the mud.
<b>Dubstep</b>	Neon against black or molten chrome: hard contrast, strobe, camera shake and glitch slams on dr
<b>House</b>	Fast scene turnover with jump cuts &mdash; party energy, warm glow.
<b>Techno</b>	Dark and punchy by design &mdash; black-based scenes cut on the beat with signature strobe, ne
<b>Psytrance</b>	UV blacklight law: white is pulled into deep violet glow; bright washes never blow out.
<b>Synthwave</b>	Neon: lifted magenta/cyan, heavy glow, and its own retro grid wire style.
<b>Experimental</b>	Anything goes &mdash; with a guard-rail against washed-out frames.

- Tip: click the active genre again to reshuffle within it — same mood, new look.

### Beat-synced autopilot

Autopilot listens to whatever is playing. It **detects drops and crescendos** and cuts the scene right then; it **times scenes musically**, snapping scene length to 8 bars of the detected tempo; and it **matches motion to BPM**, so a 174 BPM psytrance track moves visibly faster than a 90 BPM chill track. The Flow time slider is the baseline the music bends around.

### Audio reactive

Reactivity works from three sources: **your loaded music** (files, playlists, built-in tracks — automatic, no toggle needed), **the microphone** (the Audio reactive toggle; requires HTTPS and permission), and **another browser tab** (desktop: “React to audio from another tab” — pick the Spotify/YouTube tab and enable share tab audio). Autopilot and Audio reactive are both on when the app opens.

### Keyboard shortcuts (visualizer mode)

<b>Space</b>	Randomize the entire scene
<b>[ ]</b>	Previous / next fractal type
<b>A / P</b>	Toggle Autopilot
<b>S</b>	Strobe on/off
<b>W</b>	Cycle wire style
<b>C</b>	Randomize palette
<b>R</b>	Randomize within genre
<b>H</b>	Hide / show HUD
<b>F</b>	Fix clip (un-stick solid views)
<b>Arrows</b>	Zoom (up/down) &middot; speed (left/right)
<b>, .</b>	Slow / speed colour morphing

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1&ndash;0

Jump to keyframe slots 1&ndash;10

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## 4 · FRAX3D Player

The Player is the zero-setup build for listeners: genre buttons, quick effects, your music — nothing else. It shares the full engine, including beat-synced autopilot, playlists, tags and artwork.

### On the phone

The screen splits into the music bar (top), the fractal (middle) and a fixed control bar (bottom) that always fits — portrait or landscape. The control bar has two tabs: **Genres** (all 8, one tap away) and **Effects** (Fix clip, Strobe, Invert, Mirror, 8-bit, Rand colour, -/+ Speed). Next to them: **Hide** and the fullscreen toggle.

While hidden, the track name shows top-left, a **CTRL** button top-right brings the controls back, and on the free tier a small animated FRAX3D mark sits bottom-right (a Pro license removes it).

### On the desktop

The HUD floats at the bottom with genres, quick effects, a Fullscreen button and Hide HUD — hiding also hides the music bar for a completely clean screen; CTRL restores both.

### Player keyboard shortcuts

<b>K</b>	Play / pause
<b>J</b>	Previous track
<b>L</b>	Next track
<b>X</b>	Stop
<b>Media keys</b>	Hardware play/pause &middot; next &middot; previous &middot; stop all work

## 5 · Fractal Tab

36 distance-estimator fractal types, from the classic Mandelbulb and Menger Sponge to Neon Cathedral, Cosmic Coral, Psy Bloom and friends. The thumbnail strip previews every type — click to switch instantly.

<b>Seed</b>	Starting configuration for Julia-type fractals
<b>Power (2-12)</b>	Mandelbulb exponent &mdash; 8 is the classic; higher = spikier
<b>Iterations (3-18)</b>	Detail level. Above 12 is heavy on weak GPUs
<b>Fold / Scale</b>	Openness vs. density &mdash; the fundamental fractal character
<b>XYZ stretch</b>	Non-uniform distortion per axis. Manual only &mdash; autopilot never touches it (it is heavy on the GPU)
<b>Camera clip</b>	Near clipping plane &mdash; press F to fix &ldquo;solid mass&rdquo; views

## 6 · Blend Tab

Merge two fractal types into one shape. Enable **Blend two fractals**, choose Fractal B (all 36 available) and mix with **Blend amount** — 0.5 is an equal morph. **Bake B into A** makes a blend permanent; **Save blend as keyframe** captures it for animation. Blending costs GPU — lower Steps if the frame rate dips.

## 7 · Presets Tab

A preset is a named snapshot of everything. Save, load, update and delete presets; **preset sets** generate 10 scenes in the current genre with real thumbnails. Save file / Import moves presets between devices as .json.

## 8 · Camera Tab

<b>Zoom (0-1)</b>	Distance &mdash; 1 is inside the surface
<b>Yaw / Pitch</b>	Orbit angles
<b>FOV (24-74)</b>	Telephoto to wide-angle
<b>Focus XYZ</b>	The point the camera looks at &mdash; Shift+drag adjusts it live
<b>Depth / Bailout</b>	Ray-march detail and escape radius &mdash; extremes get abstract

**Double-click or double-tap the canvas to reset the view** — on every device.

## 9 - Colors & Light Tab

Cosine palettes (Acid Neon, Dream Chrome, Void Chrome, Ember, Arctic...), palette **Cycle**, continuous **Color animation**, and **Multi-palette** blending of up to three palettes. Light, Glow, Fog and Invert shape the illumination; Contrast, Saturation, Tint and Warmth are the final grading pass. Each genre additionally applies its own signature grade automatically — your sliders stack on top.

## 10 - VJ FX Tab

**Wire styles** (Neon wire, X-Ray, Hologrid, Chrome/Metal, Synthwave wire) — Chrome rolls automatically in Techno and Dubstep autopilot, Synthwave rolls its retro grid. **Strobe** with power and rarity (beat-gated). **Mirror / Mandala** — six modes, varied per genre in autopilot unless set manually. **8-bit** pixel mode. The **VJ scene set** holds 10 slots with real thumbnails and a live crossfader between any two scenes; drag the Mix output into a slot to keep a blend.

8-bit and the other manual effect toggles only appear when you switch them on, and stay on until you switch them off — autopilot never toggles them for you. Clean VJ output (no HUD, no watermark, for OBS capture) requires Pro.

## 11 - Quality Tab

<b>Fast</b> (0.42)	For live VJ &mdash; 60+ fps on most GPUs
<b>Good</b> (0.65)	Recommended default
<b>Sharp</b> (0.82)	High quality
<b>Ultra</b> (1.0)	For export, not live (Pro)
<b>Steps</b> (64-220)	Ray-march steps &mdash; the biggest single performance lever
<b>Smooth</b> (1-4)	Anti-aliasing &mdash; export-only

On the free tier the Quality sliders cap at sample size 0.82, Steps 175 and Smooth 2. A Pro key opens the full ranges (Ultra 1.0, Steps 220, Smooth 4).

## 12 - Keyframes Tab (Pro)

Each keyframe stores the complete state — including whatever autopilot was mid-way through, exactly as on screen, with a real thumbnail. Ten HUD slots (keys 1–0), Play/Stop navigation, shared segment Duration. During export, keyframes interpolate into a planned camera move.

# 13 · Export Tab

## What the free tier includes

Free exports carry a small animated FRAX3D watermark (top-right, clear of the title card) and are capped at **1080p / 30 fps** and **16 Mbps**. Pro removes the watermark and unlocks 1440p/2160p/4K, 48–60 fps and 4–32 Mbps.

## Formats & settings

**Defaults:** 1080p at 30 fps. Formats: MP4 (recommended), WebM, GIF (short loops). Aspect ratios: 16:9, 1:1, 9:16, 4:5, 4:3, 21:9. FPS dropdown: 24 · 25 · 30 · 48 · 50 · 60 (above 30 = Pro). Duration 1–900 s. The resolution dropdown is labelled by device — **720 [phone]**, **1080 [computer]** and up — because higher resolutions need a computer's GPU.

## Music video export

Import audio, then press **Music video**. Autopilot and audio reactivity switch on automatically for the export, the track is analyzed, the visuals cut and move with it — drops trigger scene changes, tempo drives the motion — and the audio is muxed into the file. You choose keyframes or a fresh randomized scene each time. Importing a new file refills the lower-third from the filename (“Artist - Track.mp3” → artist and title); edit those fields afterward for custom text. Six title-card themes.

## Render modes

**Realtime** captures live playback. **Buffered smooth** renders frame-by-frame at a locked rate and drives reactivity from a pre-analyzed envelope — slower, perfect results. On Chrome/Edge, Buffered smooth streams each frame straight to a file you choose as it renders, so memory stays flat and even long 4K exports finish without running out of memory — it keeps going if you switch tabs and simply takes as long as it takes. The screen is kept awake automatically during export.

- Tip: choppy realtime export? Switch to Buffered smooth, or lower Steps and close other tabs. On a phone, export at 720 [phone] — 1080 and up are sized for computers.

# 14 · MIDI Tab (Pro)

Web MIDI (Chrome/Edge). **MIDI Learn:** click Learn, move a knob, done — mappings persist. Knobs cover every live parameter; pads trigger toggles and keyframes. Autopilot yields any parameter you touch and keeps driving the rest — ride knobs on top of the ever-changing base show.

## 15 · Help, Language & License

The Help tab holds the quick-start, the language selector (ENG / FIN / SWE / GER) and license activation. The website adds Spanish for the guides.

### Tiers

	Free	Pro — €49 once	Venue & Label — €149
Live visualizer + all genres	yes	yes	yes
Your music, playlists, reactivity	yes	yes	yes
Export resolution	up to 1080p	up to 4K	up to 4K
Export frame rate	up to 30 fps	24–60 fps	24–60 fps
Bitrate	up to 16 Mbps	4–32 Mbps	4–32 Mbps
Watermark	yes	none	none
Keyframes · MIDI · Clean VJ out	—	yes	yes
Commercial use	—	your gigs & releases	entity · 5 seats · venue

Activate in the Help tab: paste the key from your purchase email and press Activate. Validation is online once, then cached — the app works offline afterwards. Manual keys look like FRAX3D-PRO-XXXXXXXX-XX.

## 16 · Tips, Troubleshooting & Specs

<b>Black screen</b>	Reload. If it persists after earlier crashes, fully close and reopen the browser &mdash; it may have
<b>Choppy export</b>	Use Buffered smooth; lower Steps; close other tabs
<b>A/V drift on long tracks</b>	Use Buffered smooth for a locked result
<b>Sizes/fps locked</b>	1440p+ and 48&ndash;60 fps need Pro &mdash; activate in Help
<b>MIDI not found</b>	Chrome/Edge only; connect before opening the page
<b>No mic reactivity</b>	Microphone needs HTTPS and permission
<b>Screen sleeps</b>	Wake lock needs HTTPS; a built-in video fallback covers most cases

**Recommended:** RTX 2060-class GPU, 8 GB RAM, Chrome/Edge 110+. **Minimum:** Intel Iris Xe-class, 4 GB RAM, any WebGL2 browser; keep Steps ≤ 120 and Smooth = 1. Firefox: no Web MIDI, slower shaders, and no streaming buffered export (realtime still works). Safari/iOS: WebGL2 works, export limited.