

Light Sync Plugin — User Guide

Real-time audio-reactive lighting for 3ds Max • v1.0.3

The **VanguardFX Light Sync Plugin (LSP)** turns any 3ds Max scene into a fully audio-reactive light show. Lights pulse, sweep, change color, and animate in sync with your audio — driven by the analysis data from the DSP engine. Works in **real-time viewport** and in final renders across all major engines.

What LSP does

- **Real-time playback** — see your lights react in the viewport while music plays
- **Render-ready** — bake animation to keyframes for production rendering
- **Multi-engine** — supports Arnold, V-Ray, Redshift, Octane, Corona, FStorm, Maxwell
- **35+ AUTO FX presets** — Sweep, Wave, Ripple, Mirror, Strobe, Cascade, Spiral, and more
- **50+ grid templates** — pre-built lighting rigs (line, ring, sphere, cube, custom)
- **Smart EQ band mapping** — assign bass, mids, and treble to specific lights
- **Color cycling** — dynamic HSV gradients tied to audio energy
- **Motion FX** — position and scale animation, not just intensity
- **Emoji patterns** — text and shapes painted across LED grids
- **MS-precision sync** — millisecond-accurate alignment with the DSP output
- **CPU-only rendering** — no GPU required for the real-time engine

System requirements

3ds Max version	2020 or newer (2024+ recommended)
Python	Python 3.7+ (bundled with 3ds Max)
Required packages	NumPy (auto-installed on first run)
Render engine	Any of: Arnold, V-Ray, Redshift, Octane, Corona, FStorm, Maxwell
RAM	8 GB minimum, 16 GB recommended for grids over 200 lights
Operating system	Windows 10/11 (64-bit)

Installation

After purchasing your license from **vanguardfx.pro**, you'll receive:

- A direct **download link** for the plugin ZIP archive
- Your **license key** (32-character string)
- Activation instructions

Step-by-step:

1. Download the ZIP file from the link in your email or Telegram message
2. Extract to a folder on your computer (e.g., C:\VanguardFX\)
3. Open 3ds Max
4. Go to **Scripting** → **Run Script**
5. Navigate to the extracted folder and select LSP.py
6. The plugin window will appear — your **HWID** is displayed at the top
7. Paste your **license key** into the activation dialog
8. Click **Activate** — the plugin is now ready to use

Tip: For convenience, drag LSP.py onto a 3ds Max viewport to auto-launch. You can also create a custom toolbar button: Customize → Customize User Interface → Toolbars → New → drag the LSP script onto it.

Standard workflow

The typical end-to-end process for creating an audio-reactive light show:

1. Analyze your audio in the **VanguardFX DSP** app — export a CSV file
2. Build your lighting rig in 3ds Max (or use the LSP Grid Gallery)
3. Open LSP — load the exported CSV
4. Map frequency bands to specific lights (use Smart EQ)
5. Pick an AUTO FX preset, or design your own animation rules
6. Click **Play** — see the lights react in real-time
7. When satisfied, click **Bake to Keyframes**
8. Render normally in your engine of choice

Main features in detail

AUTO FX Patterns (35+)

Pre-built animation behaviors that automatically distribute audio energy across your light grid. Pick from styles like Sweep (chase from left to right), Wave (sinusoidal travel), Ripple (expand from center), Strobe (full-on/full-off), Cascade (top-to-bottom waterfall), Spiral, Mirror, Pulse, Burst, and many more. Each preset has an intensity slider (0-100%) and can be combined with manual frequency mapping.

Grid Gallery (50+ templates)

One-click rigs for common lighting layouts: linear strips, concentric rings, spheres, cubes, helixes, theater grids, stadium rigs, and custom layouts. Pick a template, set the light count, and LSP generates the entire rig with correct spacing, parenting, and engine-specific light types.

Frequency Band EQ Pro

Divide audio into 3–512 frequency bands. Assign specific bands to specific lights. Use the visual EQ to fine-tune which frequencies drive bass lights, mid-range lights, and treble lights. Includes bass boost, treble boost, and mid-cut controls for live tweaking.

Color cycling & gradients

Dynamic color modes: HSV cycle (rainbow), bass-driven hue shift, energy-mapped gradient (cool-to-warm), strobe colors, and per-band custom palettes. Works with any RGB-capable light type.

Motion FX

Beyond brightness — animate light position, rotation, and scale in response to audio. Bass-driven Y-axis bounce, treble-driven X-axis sway, energy-driven scale pulses. Toggleable per preset (Pure mode = intensity/color only; With FX = full motion).

Emoji & text patterns

Paint emoji, letters, or shapes across LED-style grids. Type any text and LSP maps the pixel pattern onto your light array. Useful for stage backdrops, video screens, and music videos.

Sync Controls

Millisecond-accurate timeline alignment with the DSP output. Set audio offset, frame rate, and tempo division. The Sync Indicator shows live drift between audio playback and viewport rendering.

Tips & best practices

Match your timeline FPS to the CSV export FPS. If you exported the audio analysis at 30 FPS but your 3ds Max timeline is set to 24, the sync will drift. LSP shows the CSV FPS in the load dialog — set your scene to match.

Bake before rendering. The real-time engine is great for previews and iteration, but always click "Bake to Keyframes" before final rendering. Baked keyframes survive scene restarts, version control, and renderfarm uploads.

Start with 20-50 lights. Grids over 200 lights are supported but require more RAM and slower viewport playback. For 200+ lights, use the optimized engine mode in Settings.

Save your preset. After designing a great look, use File → Save Preset to export your full LSP configuration as a .vfx file. Share with your team or apply to future projects.

Troubleshooting

Plugin won't launch — "NumPy not installed" error

Open 3ds Max → Scripting Listener → run: `import pip; pip.main(["install", "numpy"])`. Restart 3ds Max. Most installs have NumPy bundled, but standalone versions may not.

Lights don't react when I press Play

Check that you've loaded a CSV file in the Analyzer tab. Confirm the audio file plays through your speakers. Verify your scene contains lights of a type supported by your render engine (e.g., Arnold scene must use Arnold_Light, not standard Omni).

Viewport playback is laggy

Reduce light count, lower viewport refresh rate (View → Viewport Configuration), or switch to the optimized engine in LSP Settings. The viewport is your preview — the final render is always smooth.

Activation fails

Your HWID may have changed (new motherboard, new GPU, OS reinstall). Contact @VanguardFX_Support on Telegram with your old and new HWIDs — we'll reissue the license. One free HWID reset per year is included.

Colors look wrong in render

Some engines (Octane, Maxwell) use linear color space. Open LSP Settings → Color Space, and switch between sRGB and Linear to match your engine.

Support

Need help? We're a small team and we read every message.

- **Telegram:** @VanguardFX_Support
- **Website:** vanguardfx.pro
- **Documentation:** vanguardfx.pro/docs
- **Email:** support@vanguardfx.pro

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