

Cobalt Space Neo User Manual

Manual language: English

Product version: 0.9.0

1. Introduction

Cobalt Space Neo is a stereo reverb and spatial effect plugin designed for Progressive Trance, Melodic House, Deep Progressive, Modern Trance, and similar production styles.

Version 0.9.0 supports the Windows 64-bit edition.

Cobalt Space Neo aims to deliver wide, rich stereo ambience while keeping CPU load low. In addition to its core reverb processing, it includes **EPIC ENGINE** — a feature whose purpose is to **intensify processing inside the feedback loop as you turn the control up, yielding more epic and sustained spatial feedback**.

Main features:

- **True Stereo** design — independent left/right predelay and input diffusion preserve the original stereo image while generating ambience
- **Three reverb modes** — Room / Hall / Cave
- **8-channel FDN** — smooth, sustained late reverb
- **EPIC ENGINE** — unified control of shimmer, saturation, and multi-phase modulation inside the feedback loop; turn it up for more epic spatial feedback
- **Central 3D visualizer** — visual feedback of spatial spread and engine state
- **Preset banks** — Factory presets and user saves

On startup, **Init Space** from the **Factory** bank is selected.

Cobalt Space Neo can be used as an Insert or Send effect on its own, and within effect chains of other Cobalt-series products (such as Cobalt Drift Neo).

Two editions are distributed: **Demo Edition** and **Product Edition**. See §2 and §13 for differences.

2. Demo Edition / Product Edition

Cobalt Space Neo 0.9.0 is available in two editions:

Edition	Summary
Demo Edition	Evaluation build. Audio is muted after 900 seconds of real time from load, and some save features are unavailable (see §13)
Product Edition	Full product. Demo limitations above do not apply

Neither edition guarantees full operation in every DAW, environment, or project. Back up important DAW project files before use.

The version number is available from Menu → **About**. About shows Version plus the version number (for example 0.9.0), followed by **Demo Edition** or **Product Edition**.

3. System Requirements

Supported OS

- Windows 11 64-bit recommended
- Windows 10 64-bit or later

Supported Formats

- VST3
- CLAP

Distribution formats are **VST3** and **CLAP** only.

The CLAP edition is an experimental distribution format. Behavior may vary depending on the host environment. If stability is your priority, we recommend starting with the VST3 edition.

Supported Hosts

- 64-bit DAWs that support VST3 or CLAP
- Stereo audio tracks or effect buses

4. Installation and Launch

Cobalt Space Neo is distributed as a zip package. There is no installer. Extract the zip and place the plugin files manually.

Distribution file names

- Cobalt Space Neo.vst3
- Cobalt Space Neo.clap

VST3 install location

Place the plugin in one of the following folders:

```
C:\Program Files\Common Files\VST3\  
%LOCALAPPDATA%\Programs\Common\VST3\
```

For all users, the following folder is usually recommended:

```
C:\Program Files\Common Files\VST3\
```

CLAP install location

Place the plugin in one of the following folders:

```
C:\Program Files\Common Files\CLAP\  
%LOCALAPPDATA%\Programs\Common\CLAP\
```

After placing the VST3 or CLAP file, restart your DAW or run a plugin rescan.

5. Screen Layout

The Cobalt Space Neo window is a single-screen layout based on **1120 × 680** pixels. The window can be resized from **75% to 200%** with a fixed aspect ratio.

Area	Position	Contents
Preset bar	Top	Bank / Preset selection, SAVE / INIT, Undo / Redo, Menu, BYPASS, KILL
SPACE	Left	Reverb mode and time/size parameters (TIME & SIZE)
Visualizer	Center	3D spatial display and engine status
FILTER	Right	Tone and damping parameters (DAMP & TONE)
EPIC ENGINE	Bottom	Input/output gain, modulation, MIX / OUT, level meters

A clear workflow is to set mode and Decay in **SPACE**, shape tone in **FILTER**, then adjust spatial density and Mix in **EPIC ENGINE**.

Visualizer status display

The top of the center visualizer shows status text based on the EPIC ENGINE amount:

EPIC ENGINE	Display text	Meaning
0%	BYPASSED (PURE REVERB)	EPIC ENGINE off. Pure FDN reverb
1–50%	WARM MODULATION & GLOW	Gentle modulation and glow
51–100%	HYPERDRIVE (SHIMMER PORTAL)	Strong shimmer and spatial expansion

Raising EPIC ENGINE also strengthens the amber background glow to reflect engine activity.

6. Preset Bar

The top preset bar handles preset selection and saving, undo, bypass, and clearing the reverb state.

Control	Role
Bank	Select preset bank
Preset	Select preset
< >	Move to previous / next preset
SAVE	Save the current settings to a User bank (unavailable in Demo Edition)
INIT	Reset settings to defaults (confirmation dialog; also clears reverb state)

Control	Role
Undo / Redo	Undo or redo edits
Menu	About, Import / Export / Rename / Delete Bank
BYPASS / BYPASSED	Plugin bypass ON / OFF
KILL	Immediately clear reverb buffers (cut the tail)

BYPASS and **KILL** are different functions.

- **BYPASS** — Outputs dry signal only while keeping settings. Host-automatable.
- **KILL** — Resets delay-line and feedback internal state to stop ringing tails. Parameter values do not change.

INIT resets parameters to defaults and clears reverb buffers at the same time.

See §12 and §13 for Demo Edition save and bank restrictions.

7. Quick Start

Using presets

1. Select **Factory** as the Bank
2. Choose a preset (for example **Ethereal Cathedral** or **Vocal Plate Room**)
3. Play audio and listen to the reverb
4. Balance level with **MIX** and **OUT**

Building a space from scratch

1. Select **Init Space**
2. Choose Room / Hall / Cave with **REVERB MODE**
3. Set timing with **PREDELAY** and **DECAY**
4. Adjust size and smoothness with **SIZE** and **DIFFUSION**
5. Clean mud and brightness with **LOW CUT / HIGH CUT / DAMPING**
6. Adjust stereo spread with **WIDTH**
7. Raise **EPIC ENGINE** as needed and shape motion with **MOD RATE / MOD DEPTH**
8. Set Dry / Wet balance with **MIX**

8. SPACE Panel (TIME & SIZE)

The left SPACE panel controls the reverb algorithm mode and basic time/space parameters.

Reverb Mode

Mode	Typical use
Room	Compact, dense spaces. Vocals, plates, tight rooms

Mode	Typical use
Hall	Medium to large smooth halls. Pads, synths, epic tails
Cave	Large irregular spaces. Deep caves, dramatic ambience

Internal delay topology and character change with the mode. In **Hall** and **Cave**, an internal cap limits extreme EPIC ENGINE behavior.

Parameters

GUI label	Host name	Range	Default	Summary
REVERB MODE	Reverb Mode	Room / Hall / Cave	Room	Reverb algorithm switch
PREDELAY	Predelay	0.0 – 200.0 ms	10.0 ms	Delay before reverb onset
DECAY	Decay Time	0.5 – 30.0 s	1.8 s	Approximate reverb decay time
SIZE	Space Size	10 – 150 %	100 %	Overall delay-line scale
DIFFUSION	Diffusion	0 – 100 %	70 %	Early-reflection diffusion / smoothness

Raising **PREDELAY** creates space between the dry signal and the reverb, which helps separate vocals or kick. Higher **DIFFUSION** smooths the onset; lower values make early reflections slightly more audible.

9. FILTER Panel (DAMP & TONE)

The right FILTER panel shapes reverb tone and stereo width.

GUI label	Host name	Range	Default	Summary
LOW CUT	Low Cut	20 – 1000 Hz	120 Hz	Low-frequency cut on the reverb
HIGH CUT	High Cut	1000 – 20000 Hz	14000 Hz	High-frequency cut on the reverb
DAMPING	Damping	0 – 100 %	30 %	High-frequency damping inside the feedback loop
WIDTH	Stereo Width	0 – 150 %	100 %	Stereo spread via M/S processing

Use **LOW CUT** to reduce vocal mud or kick bleed, and **HIGH CUT / DAMPING** for darkness and air. Raising **WIDTH** widens the stereo image; too much can thin the center.

10. EPIC ENGINE Panel

The bottom EPIC ENGINE panel is the combined control for input/output, modulation, and Mix. It is split into three tiles (**INPUT**, **EPIC ENGINE**, **OUTPUT / MASTER**).

What EPIC ENGINE is

EPIC ENGINE is not only “more effect.” Its purpose is to **produce more epic, sustained spatial expression through an intensified feedback loop**.

In Cobalt Space Neo, EPIC ENGINE sits **inside** the 8-channel FDN (Feedback Delay Network) feedback loop. While a typical reverb is closer to a one-way path (input → reverb → output), EPIC ENGINE changes **the circulating loop**

signal itself. Raising EPIC ENGINE therefore changes decay shape, modulation depth, and harmonic density together, so the space expands organically.

At 0%, loop processing is effectively bypassed and the plugin behaves as a pure FDN reverb (the visualizer shows **PURE REVERB**).

Signal flow

Signal flow is roughly:

```
[Input L/R]
→ [Independent L/R predelay]
→ [Input diffusion (4-stage allpass per side)]
→ [8ch FDN feedback loop]
    ■■ EPIC ENGINE (inside the loop)
        ■■ 8x8 Hadamard channel mixing
        ■■ Shimmer (octave pitch shift)
        ■■ Saturation (tanh nonlinear drive)
        ■■ Multi-phase modulation (delay-time motion)
→ [Low / High Cut filters]
→ [Stereo Width]
→ [Wet / Dry mix]
→ [Output L/R]
```

One EPIC ENGINE knob scales several loop processes together. **MOD RATE** and **MOD DEPTH** further shape the modulation component independently.

Three core processes

1. Shimmer

An octave pitch shifter inside the FDN feedback loop writes a one-octave-up component back into the loop. Raising EPIC ENGINE increases this shimmer blend, adding cloud-like glow and high-end spread.

The pitch-shifter path includes a one-pole low-pass filter to keep harsh ultra highs under control while preserving scale. This is a core “sky-filling” texture for Cobalt-series trance / melodic sounds.

2. Saturation

A tanh-style nonlinear saturation is applied to the loop signal. Higher EPIC ENGINE values drive harder, thickening the reverb and reinforcing sustain so the feedback remains dense rather than thin. This is one of the acoustic pillars of EPIC ENGINE’s epic feedback character.

3. Multi-phase Modulation

Each of the eight delay times is modulated by a sine LFO phase-offset by 45 degrees. Distributed phases reduce cancellation between delays and add silky chorus and depth without obvious pitch warble.

Effective modulation depth expands nonlinearly with EPIC ENGINE (up to about 3.5×). Combined with **MOD RATE** / **MOD DEPTH**, the space can move from static hall character to fluid motion.

Impact on feedback and decay

EPIC ENGINE also changes **decay behavior itself**:

- **Dynamic decay blend** — Near 0%, tails tend to decay as set; near 100%, the curve becomes slower and more sustained
- **Effective Decay Time extension** — EPIC ENGINE boost stretches the effective decay of the **DECAY** control. The same Decay setting becomes clearly longer and more epic when EPIC ENGINE is raised

- **Feedback gain ceiling** — A feedback gain ceiling (0.9985) prevents runaway howl. EPIC ENGINE pushes sustain toward that safe limit

In short, EPIC ENGINE does not only add an effect layer; it **reshapes the reverb's time structure and feedback character**.

Interaction with reverb mode

EPIC ENGINE behavior also depends on **REVERB MODE**:

Mode	Relationship to EPIC ENGINE
Room	Compact FDN. EPIC ENGINE adds glow and density inside a tighter space
Hall	Smooth 8ch Hadamard FDN. Even at 100% UI, EPIC ENGINE is clamped to 80% internally to limit extreme saturation while keeping scale
Cave	Large delay topology. EPIC ENGINE is also clamped to 80%, but modulation is strengthened by 1.5× for more fluid, dramatic motion

Visualizer correspondence

EPIC ENGINE amount drives the center visualizer status text and background glow described in §5.

INPUT

GUI label	Host name	Range	Default	Summary
IN	Input Gain	-12.0 – +12.0 dB	0.0 dB	Plugin input level

The **IN** meter uses a logarithmic scale from -40 dB to +6 dB, with a mark at 0 dB. Because EPIC ENGINE intensifies feedback, hot input increases both scale and saturation. Set **IN** first, then raise EPIC ENGINE for easier control.

EPIC ENGINE (center tile)

GUI label	Host name	Range	Default	Summary
EPIC ENGINE	EPIC ENGINE	0 – 100 %	0 %	Combined loop shimmer, saturation, and modulation amount
MOD RATE	Mod Rate	0.1 – 5.0 Hz	0.5 Hz	Delay-time modulation LFO speed
MOD DEPTH	Mod Depth	0 – 100 %	12 %	Delay-time modulation LFO depth

MOD RATE / **MOD DEPTH** further sculpt the multi-phase modulation from EPIC ENGINE. Keep EPIC ENGINE high and lower **MOD RATE** for slow undulation; raise **MOD DEPTH** for more fluid, organic tails.

Factory presets **Shimmering Portal** and **Deep Nebula Cave** are strong starting points for EPIC ENGINE and modulation.

OUTPUT / MASTER (right tile)

GUI label	Host name	Range	Default	Summary
MIX	Mix	0 – 100 %	30 %	Dry and wet blend
OUT	Output Gain	-12.0 – +12.0 dB	0.0 dB	Final output level

The **OUT** meter uses the same dB scale as input. Above 0 dB the meter uses a warning color. Higher EPIC ENGINE often raises wet level, so watch **OUT** and the DAW track meters.

At **MIX** 0%, only dry is output.

Usage guidelines

Use	EPIC ENGINE	Notes
Vocals / room	0–20%	PURE REVERB to WARM. Light body without mud
Pads / synth pads	30–60%	WARM toward HYPERDRIVE. Balance spread and sustain
Ambient / breakdown	70–100%	HYPERDRIVE. Shimmer and long tails dominate the space
Pre-drop build	80–100% + long DECAY	Maximize feedback. Watch levels

If previous tails linger after a musical change, press **KILL** to reset the loop state.

11. Factory Presets

The Factory bank includes:

Preset	Summary
Init Space	Startup default. Simple reverb starting point
Ethereal Cathedral	Large hall, high Diffusion, moderate EPIC ENGINE
Deep Nebula Cave	Cave mode, long Decay, strong EPIC ENGINE and modulation
Vocal Plate Room	Room mode, tight plate-like vocal space
Shimmering Portal	Hall, maximum EPIC ENGINE, shimmer-focused space

Use presets as starting points and fine-tune **MIX**, **LOW CUT**, **DECAY**, and related controls for your track.

12. Preset Save and Management

Save location

User presets and bank files are stored in:

```
%APPDATA%\Synth Studio Neo\Cobalt Series\Cobalt Space Neo\
```

Bank files use the .csnb extension. Individual preset export uses .csnp.

Operations

Operation	Method	Demo Edition	Product Edition
Save preset	SAVE → enter name → save to User bank	Unavailable	Available
Import bank	Menu → Import Bank	Available	Available
Export bank	Menu → Export Bank	Unavailable	Available
Rename bank	Menu → Rename Bank	Unavailable	Available
Delete bank	Menu → Delete Bank	Available	Available

Unavailable Demo Edition actions show an English notice (Feature Unavailable in Demo).

13. Demo Edition Limitations

The following limitations apply to **Demo Edition** only. They do not apply to **Product Edition**.

- **900 seconds (15 minutes)** of real time after the plug-in is loaded, audio output fades out and then becomes silent
- After mute, restart (reload) the plug-in to begin a new demo session
- **SAVE**, **Export Bank**, and **Rename Bank** are unavailable
- **Import Bank** remains available

A short Demo Edition summary is also shown in Menu → **About**.

14. Usage Notes

- **EPIC ENGINE** and long **DECAY** lengthen tails; previous reverb may continue after material changes. Use **KILL** for a clean stop
- High **EPIC ENGINE** or Input Gain can raise output level easily. Check the **OUT** meter and DAW track meters
- High **MIX** can blur the dry signal. When using Send, balance send level and return **MIX**
- If CPU load is a concern, lower **DECAY**, **SIZE**, **EPIC ENGINE**, and **MOD DEPTH**, or reduce instance count
- If the CLAP edition is unstable, try the VST3 edition

15. Troubleshooting

Plugin does not appear in the DAW

- Confirm the VST3 or CLAP file is in the correct folder
- Run a plugin rescan in the DAW
- Confirm you are using a 64-bit DAW

No sound / no reverb heard

- Confirm audio is reaching the track
- Check track monitor, mute, and level
- Confirm **MIX** is not 0%
- Confirm **BYPASS** is not ON
- In Demo Edition, confirm audio has not been muted after 900 seconds from load. If muted, reload the plug-in

Reverb will not stop

- Press **KILL** to clear internal state
- Turn **BYPASS** ON to verify dry signal

- If needed, reload the plugin instance

Too loud or distorted

- Lower **OUT**
- Lower **IN** and EPIC ENGINE amount
- Check DAW track meters

High CPU usage

- Lower **DECAY** and **SIZE**
- Lower EPIC ENGINE and **MOD DEPTH**
- Reduce instance count in the project
- Increase DAW buffer size

16. Specifications and Credits

Item	Details
Product name	Cobalt Space Neo
Version	0.9.0
Supported OS	Windows 64-bit
Formats	VST3, CLAP
Developer	Synth Studio Neo
Editions	Demo Edition / Product Edition

Cobalt Space Neo is developed using the JUCE framework.

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Version information is also available from Menu → About Cobalt Space Neo.

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