

HyperVerb

User Manual - Version 1.0.0

Arbor

Contact: jussi.vaisanen@proton.me

Stereo FDN reverb (VST3) with early reflections, input diffusion, per-line damping, XY performance pad and 14 factory presets.

ARBOR

Room Size:

Large Cathedral

Early Reflection Spread:

30 ms

PreDelay ms

25.00 ms

Diffusion %

75.00 %

Brightness Hz

10000 Hz

ReverbTime s

9.70 s

Early/Late %

40.00 %

MasterMix %

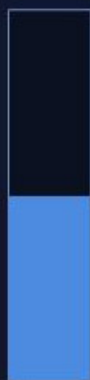
60.00 %

X

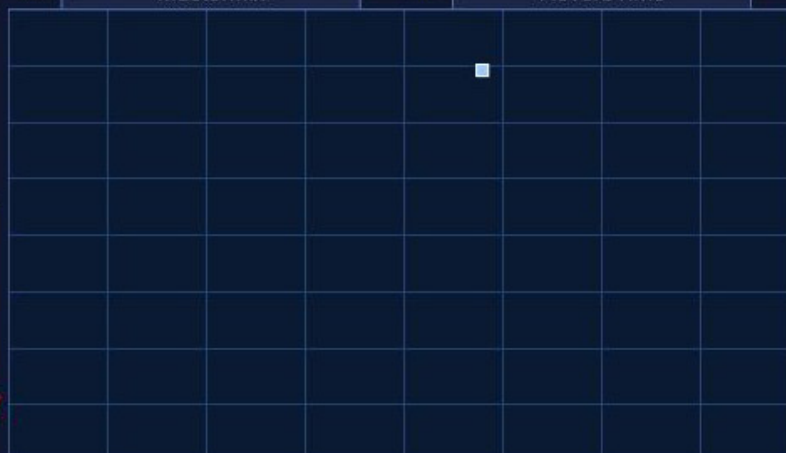
MasterMix

Y

ReverbTime



Output Level



Overview

HyperVerb implements a high-quality reverb based on a 16-line Feedback Delay Network (FDN) with input diffusion, early reflections, and sophisticated damping controls.

Key Features

- 16-line FDN with normalized Hadamard feedback matrix for smooth, uncolored decay
- Early reflection system with spread control
- Input diffusion allpass network (6 stages)
- Per-line damping for frequency-dependent decay shaping
- Pre-delay up to 1000ms
- Room size interpolation (10 room types)
- Early reflection spread (Auto + 30-120ms)
- Comprehensive output level control per channel

Signal Flow

1. Input - Stereo input signal
2. Pre-delay - Delays input before processing (0-1000ms)
3. Early Reflections - 16-tap early reflection network with adjustable spread
4. Input Diffusion - 6-stage allpass network (coeffs 0.75, 0.62, 0.5, 0.35, 0.24, 0.13)
5. FDN - 16 delay lines with Hadamard mixing and damping
6. Late/Early Balance - Mix between early reflections and late reverb tail
7. Dry/Wet Mix - Master mix control
8. Output - Per-channel level control (-18 to +18 dB)

Parameters

All parameters are accessible via automation, host parameter modulation, and the UI.

Time & Pre-Delay

PreDelay (0-1000 ms, default: 25.0 ms)

Controls the amount of time before the reverb onset. Increasing pre-delay creates a clearer, more distinct initial sound by separating dry signal from reverb tail.

Usage:

- Short (0-10ms): Natural, tight reverb
- Medium (10-50ms): Classic hall/room sound
- Long (50-200ms): Creates space, useful for vocals and leads
- Very long (200-1000ms): Special effects, slap delays with reverb

Diffusion & Character

Diffusion (0-100%, default: 75%)

Controls the density of the reverb tail by adjusting input diffusion allpass stages. Higher values create smoother, more dense reverb with less discrete echoes.

Usage:

- Low (0-30%): Grainy, sparse, more echo-like
- Medium (30-70%): Balanced, natural
- High (70-100%): Very smooth, dense, lush

Brightness (20-20000 Hz, default: 10000 Hz)

Controls high-frequency damping in the reverb tail. This affects the tonal character - lower values result in warmer, darker reverb; higher values give brighter, airier reverb.

Usage:

- Dark (2000-5000 Hz): Warm, intimate, vintage character
- Natural (5000-10000 Hz): Balanced, realistic
- Bright (10000-15000 Hz): Airy, spacious, modern
- Very bright (15000+ Hz): Shimmery, glassy

Note: This is a logarithmic parameter for natural control across the frequency range.

Size & Time

ReverbTime (0.1-20.0 s, default: 9.7 s)

Sets the decay time (T60) of the late reverb tail. This is the time for the reverb to decay by 60 dB.

Usage:

- Very short (0.1-0.5s): Ambience, small rooms

- Short (0.5-1.5s): Rooms, chambers
- Medium (1.5-3.0s): Halls
- Long (3.0-6.0s): Cathedrals, large spaces
- Very long (6.0-20.0s): Special effects, pads

Note: Logarithmic scaling for precise control at shorter times.

Room Size (10 choices, default: 9.0 = Large Cathedral)

Selects the base delay line lengths for the FDN. This determines the overall spatial character and resonant properties.

Options:

1. Small Closet (idx 0)
2. Large Closet (idx 1)
3. Small Room (idx 2)
4. Medium Room (idx 3)
5. Large Room (idx 4)
6. Small Hall (idx 5)
7. Medium Hall (idx 6)
8. Large Hall (idx 7)
9. Small Cathedral (idx 8)
10. Large Cathedral (idx 9)

The implementation interpolates between small/mid/large room regimes based on the selected index for smooth transitions.

Early Reflection Spread (11 choices, default: 1.0 = 40 ms)

Controls the spatial distribution of early reflections. This affects the perceived width and density of the initial reflections.

Options:

0. Auto (1.0x scaling)
1. 30 ms
2. 40 ms
3. 50 ms
4. 60 ms
5. 70 ms
6. 80 ms
7. 90 ms
8. 100 ms
9. 110 ms
10. 120 ms

- Auto: Uses natural tap distribution (mean-centered scaling factor 1.0)
- Lower values (30-60ms): More focused, intimate early reflections
- Higher values (70-120ms): Wider, more spacious early field

Mix & Balance

Early/Late (0-100%, default: 40%)

Balances the mix between early reflections and the late reverb tail.

Usage:

- 0%: Emphasizes late tail, more diffuse sound
- 50%: Balanced between early and late (natural)
- 100%: Emphasizes early reflections, clearer, more defined

MasterMix (0-100%, default: 60%)

Controls the dry/wet mix of the effect.

Usage:

- 0%: Dry only (no reverb)
- 50%: Equal balance of dry and wet
- 100%: Wet only (reverb only)

Output

Output Level L (-18 to +18 dB, default: 0.0 dB)

Left channel output trim. Provides ± 18 dB of gain adjustment after mixing.

Output Level R (-18 to +18 dB, default: 0.0 dB)

Right channel output trim. Provides ± 18 dB of gain adjustment after mixing.

Tip: Use the Output Level controls for precise level matching when inserting the reverb into a mix. The UI includes a "Lock" option to link left and right channels for simultaneous adjustment.

Factory Presets

HyperVerb includes 14 factory presets designed for common mixing scenarios.

#	Preset Name	Characteristics	Suggested Use
---	---	---	---
1	[FP] Ambience 1	Short, natural ambience with moderate mix	Adding subtle space to drums, acoustic instruments
2	[FP] Ambience 2	Longer ambience, darker tail	Background ambience, field recordings
3	[FP] Bright Hall	Bright, spacious hall with wider spread	Orchestral, strings, pads
4	[FP] Warm Hall	Warm, rounded hall character	Piano, acoustic guitar, vocals
5	[FP] Chamber	Classic chamber reverb, intimate	Classical, jazz, dry recordings needing life
6	[FP] Drum Hall	Medium hall optimized for drums	Snare, toms, drum bus
7	[FP] Drum Room	Tight room sound	Rock drums, punchy mixes
8	[FP] Plate Wanna-Be	Smooth, bright character reminiscent of plate reverb	Vocals, percussion, lead instruments
9	[FP] Public Restroom	Small, reflective space with characteristic slap	Creative effects, humor
10	[FP] Slap-Back	Very short decay with prominent early reflections	Vintage slap-back, 50s/60s style
11	[FP] State Capitol	Large, majestic space	Orchestral swells, cinematic
12	[FP] Voice Over 1	Tailored for voice with clarity	Narration, podcasts, broadcast
13	[FP] Voice Over 2	Alternative voice character	Dubbing, ADR
14	[FP] Wash	Lush, washy reverb	Pads, textures, ambient music

Loading Presets

Presets can be loaded via:

- Host preset browser (VST3 program list)
- UI program/preset selector in the host
- Automation of program changes (if supported by host)

All factory presets are stored in the plugin's internal program list and are accessible as VST3 unit programs.

UI Reference

HyperVerb features a clean, intuitive interface based on the original Hyperprism design.

Layout Overview

The 1.0.0 UI is enlarged 125% over the original dialog (338x298 dialog units, rendered at roughly 631x600 pixels) with 11 pt text throughout. It has the following main sections:

Header

- ARBOR Logo (top-left): Arbor branding on the dark window background

Parameter Sliders (Left/Center Column)

Six horizontal sliders control the primary reverb parameters:

Slider	Parameter	Range	Units
---	---	---	---
1	PreDelay	0-1000	ms
2	Diffusion	0-100	%
3	Brightness	20-20000	Hz
4	ReverbTime	0.1-20.0	s
5	Early/Late	0-100	%
6	MasterMix	0-100	%

Each slider has an associated value display/edit box showing the current value with appropriate units.

Room Configuration (Top Right)

- Room Size (combo box): Select from 10 room types (Small Closet to Large Cathedral)
- Early Reflection Spread (combo box): Select Auto or 30-120ms spread values

Output Section (Bottom Left)

- Output Level L (vertical fader): Left channel trim (-18 to +18 dB)
- Output Level R (vertical fader): Right channel trim (-18 to +18 dB)
- Lock (checkbox): When enabled, moving either fader moves both together

XY Pad Section (Right Side)

The XY pad provides intuitive control of two parameters simultaneously. Click and drag to control both axes. The X/Y selector row sits directly on the dark window background (no accent panel behind it in 1.0.0).

- X Axis (combo selector): Choose which parameter to control horizontally
- Y Axis (combo selector): Choose which parameter to control vertically

Available axes:

- PreDelay
- Diffusion
- Brightness

- ReverbTime
- Early/Late
- MasterMix

Default: X = MasterMix, Y = ReverbTime

Visual Elements

- XY grid: Dark navy pad with a light marker showing the current X/Y position
- Logo: ARBOR branding, regenerated at higher resolution for the enlarged UI
- Color Theme: Dark navy window (#10172E) with blue (#4c8be0) accents for slider fills, X/Y labels and value highlights

Tips & Techniques

Mixing Applications

Vocals

- Use moderate pre-delay (15-30ms) to keep vocals upfront
- Plate Wanna-Be or Voice Over presets as starting points
- Keep Early/Late around 40-60% for clarity
- Moderate reverb time (1-2s) to avoid washing out
- Lower Brightness (4000-7000 Hz) for warmth and to avoid sibilance

Drums

- Drum Room preset for tight, punchy sound
- Drum Hall for bigger, more open kits
- Use shorter pre-delay (0-15ms)
- Lower reverb time (0.5-1.5s)
- Consider using on bus or individual drums (snare, toms)
- MasterMix around 15-40% to maintain transients

Acoustic Instruments

- Warm Hall preset works well for piano, guitar, strings
- Moderate room size for natural sound
- Diffusion at 70-90% for smoothness
- Brightness tuned to instrument (brighter for darker instruments)

Synths & Pads

- Wash preset as starting point
- Longer reverb times (3-8s) for ambient pads
- Higher diffusion (90-100%) for lush wash
- Higher Brightness (8000-12000 Hz) for airiness
- Can use higher MasterMix for textural effects

Creative Techniques

Creating Depth

1. Increase PreDelay (30-80ms) to separate source from reverb
2. Adjust Early/Late balance - more early reflections for definition, more late for distance
3. Use XY pad to morph between parameters in real-time

Tight Spaces

- Small Room or Chamber settings
- Short ReverbTime (0.3-1.0s)
- Lower Spread (30-50ms)
- Higher Early/Late ratio (>60% early)

Huge Spaces

- Large Cathedral or Large Hall
- Long ReverbTime (4-12s)
- Higher Spread (80-120ms) for width
- Lower Early/Late (20-40%) for more tail

Gated Reverb Effect

- Use very short ReverbTime (0.1-0.4s) combined with automation
- High Diffusion for smooth tail
- MasterMix adjusted to taste

Parameter Interactions

- Room Size + ReverbTime: Larger rooms naturally support longer decay times
- Brightness + ReverbTime: Long reverb times can sound muddy without adequate brightness
- Diffusion + Early/Late: Higher diffusion softens the boundary between early and late
- Spread + Room Size: Spread affects early reflection width; interacts with room character
- PreDelay + MasterMix: Crucial for maintaining clarity at higher mix levels

Optimization Tips

- For real-time performance, very long reverb times with high diffusion are most CPU-intensive
- Use MasterMix conservatively (15-40%) for most mix applications
- The XY pad is excellent for automation and performance control
- Output level faders help with gain staging

Disclaimer

HyperVerb is an independent, clean-room reimplementation of the Arboretum Hyperprism 2.5 HyperVerb effect. It contains no original code, binaries, or other assets from the original product.

It is not affiliated with, endorsed by, or supported by Arboretum Systems, its successors, or any rights holder of the original software. "Hyperprism" and "HyperVerb" are referenced only to describe the recreated effect, and all trademarks remain the property of their respective owners.

This software is provided "as is", without warranty of any kind, express or implied. In no event shall the author be liable for any claim, damages, or other liability arising from the use of this software.

Installation & Support

Run install_hyperverb.cmd from the installer package. It installs:

- Plugin: <ProgramFiles>\Common Files\VST3\Hyperprism\HyperVerb.vst3
- Presets (14 factory .vstpreset files):
 <ProgramData>\VST3 Presets\Arbor\HyperVerb\

The installer shows both paths before copying and lets you install the plugin only, the presets only, or both. After installing, restart your DAW and rescan VST3 plug-ins if HyperVerb does not appear immediately.

Support contact: jussi.vaisanen@proton.me

Version: 1.0.0 (Arbor).