

PLATE

CUSTOM-SHOP ELECTRO-MECHANICAL REVERB

Software User Manual

Software Version 1.0
EN 181015

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Introduction



PLATE CUSTOM-SHOP ELECTRO-MECHANICAL REVERB

OVERVIEW

Explore the deep and rich sound of plate reverb like never before with UVI Plate, an advanced physically-modeled reverb. Plate employs realtime physical-modeling with up to 20,000 modes to achieve new levels of depth and detail, going well beyond the limitation of physical units. Take complete control over your plate's material and dampening properties and explore a universe of reverb sounds from classics like the EMT140 and 240, and beyond.

APPROACH

Our goal was not to clone a specific hardware reverb, but we wanted to replicate the sound of many of them and allow users to experiment with their physical characteristics, even designing their own.

To reach this goal we've built an entire plate reverb system as a fully-parametric physical model. We approached it from the perspectives of both science and musicality. Forming the models core on extensive mathematical research and then calibrating the results against detailed measurements made of an EMT140 and EMT240.

With Plate we simulate every component of the sound: dimensions, material, input/output positioning, modulation and decay sculpting while staying around the general sonic territory allowed by physics. In doing so we're able to create a near-endless array of authentic plate reverb sound.

All decay times are expressed using the RT60 decay time definition, i.e. the time it takes for the reverb intensity to decay of 60dB.

Materials and decay properties have been calibrated using both the published properties of metal sheets alloys and on measures made on 2 vintage EMT140 and EMT240 units measured in a recording studio in Paris (Steel and Gold materials)

CLASSIC PLATE AND BEYOND

Plate delivers a fully-parametric physical model of electro-mechanical reverb, capable of dialing in sounds of specific physical units with uncanny precision or creating wholly-new reverbs ripe with sound design potential.

EASE OF USE

Even with all the features, we've made sure that using Plate is a breeze thanks to a customizable user interface. The default 'Compact' mode is perfect for quickly browsing the included presets and dialing them in to suit your input material. Toggling the 'Expanded' view reveals additional controls including the visual decay editor where you can take full control over the nuts and bolts to precisely shape your reverbs sound.

STUNNING SOUND, UNMATCHED CONTROL

Incredible on vocals, instruments and a powerful sound design tool, Plate delivers extraordinary versatility and a truly gorgeous sound.

System Requirements



Compatibility

Audio Units, VST or AAX

Tested and Certified in :

Digital Performer 8+, Pro Tools 11+, Logic X+, Cubase 7+, Nuendo 6+, Ableton Live 8+, Studio One 2+, Garage Band 6+, Maschine 1+, Tracktion 4+, Vienna Ensemble Pro 5+, Reaper 4+, MainStage 3, MuLab 5.5+, FL Studio, Bitwig 1+, Reason 9.5+

Minimum System Requirements

- Mac OS X 10.9 or higher (64bit only)
- Mac Intel supporting the AVX instruction set (Intel Core i3, i5, i7, i9: SandyBridge, IvyBridge, Haswell, Broadwell, Skylake,...) or ARM (Apple Silicon) Processor, 4 GB RAM



Compatibility

VST or AAX

Tested and Certified in :

Digital Performer 8+, Pro Tools 11+, Cubase 7+, Nuendo 6+, Ableton Live 8+, Studio One 2+, Maschine 1+, Tracktion 4+, Vienna Ensemble Pro 5+, Reaper 4+, Sonar X3+, MuLab 5.5+, FL Studio, Bitwig 1+, Reason 9.5+

Minimum System Requirements

- Windows 8 or higher (64bit only)
- Intel Processor supporting the AVX instruction set (Intel Core i3, i5, i7, i9: SandyBridge, IvyBridge, Haswell, Broadwell, Skylake,...), 4 GB RAM

Flexible Authorization With iLok



All UVI licenses allow up to 3 concurrent activations on any combination of computer hard drives or iLok USB keys, easily managed through the iLok License Manager (iLok account required).

Interface - Main [Compact View]



1 ► Menu Toggle

Toggle the drop-down menu to Load and Save presets below

- » Load: Opens locate dialog to load a saved preset
- » Save: Saves current settings
Give a new name to save as new preset
- » Load Band Decay : Load a saved Band Decay preset
- » Save Band Decay: Saves current Band Decay settings
- » Load Band EQ : Load a saved Band EQ preset
- » Save Band EQ: Saves current Band EQ settings
- » Load IO : Load a saved Input and Output position preset
- » Save IO: Saves current Input and Output position preset

2 ► Preset Name

Click to show the drop-down menu to load the factory or saved user preset

3 ► A/B Snapshot

Use to store two different plugin states for A/B comparison

- » Initial Click: Stores current state to memory A
- » Following Clicks: Stores current state in bank A (resp B) and loads the previous state from bank B (resp A)

4 ► Material

Select material of the metal plate, choose from Steel, Gold, Silver, Titanium or Aluminum

5 ► IO Position

Set the position of inputs and outputs on the plate
Drag the left or right speaker icon to place the input position, and microphone icons to place the output position

**Alt+click to reset the position*

6 ► Level Meter

Displays the input (left) and the output (right) level of the plugin

**Output color depends on the material of choice*

7 ► Geometric Control

Drag the plate edge to change the plate's area and aspect

8 ► Plate Control

» Area

Set the plate area in squared meter [0.6~6.0m², expressed in steel equivalent units] - influences the modal density and the frequency of the modes

» Aspect

Set the plate aspect ratio [0.05~20] to controls the mode distribution

» Anisotropy

Introduces small defects in the metal [0~1%] resulting in slight, variable detuning of the modes

» Tension

Sets the plate tension [0~2000 Newton/meter], to raise the frequency of lower modes

» Modulation

Modulates mode frequencies over time
Can help make synthetic sounds more interesting and dynamic [0~100%]

Interface - Main [Compact View] - continued



9 ► Quality

Controls the maximum number of modes used for the simulation. This is similar to the polyphony parameter of a synthesizer. But unlike synth instrument, Plate's "polyphony" can go from 3,000 modes for "Low" to 20,000 modes for "Insane".

10 ► Decay

The main decay control (200ms~infinity), by reproducing applying damper to the plate, as original plate reverb units.

**With damper off or infinite, you control the undamped "infinite" decay response, and then the damper brings in a natural damping on top of this like on actual plate reverb units.*

11 ► Mix

Adjusts the wet/dry signal balance of the effect (0~100%)

12 ► Low Cut

Controls the attenuation of the low cut shelving filter [-40~0dB] useful for taming boom and bass-heavy sounds

13 ► Expanded View

Expands the UI to access additional controls

14 ► Tool Tips

Display instructions for any parameter by hovering over it with your mouse

15 ► Parameter Lock

Right-click any knob or plate control (except Tension) to lock the parameter value. Use to lock key parameters while browsing presets.



- » Locked (toggle)
- » Unlock All Parameters



○ You'll see a small lock appear next to the parameter name signifying the state change

Interface - Expanded View - Decay Editor



1 ► EQ/Decay Toggle

Click disable to show the Decay editor

2 ► Display Editor

Drag the lines in the display to set the decay response

- Red line: Damper
- Orange line: Friction
- Purple line: Air
- Turquoise line: Band Decay

3 ► Damper

The main decay control

» On/Off

Click the Damper label to enable/disable

» Decay (low)

Sets the decay time of the low frequencies [200ms~infinity, same as Decay knob in the compact view]

**Infinity means maximum decay time, controlled by the metal plate size*

» Frequency

Set the main damper crossover frequency (100~10kHz)

4 ► Friction

Enable viscoelastic damping

» On/Off

Click the Friction label to enable viscoelastic damping

» Damp

Changes the amount of viscoelastic damping relatively [None~x10]

» Frequency

Changes the viscoelastic damping frequency relatively [/100~x100]

5 ► Air

Enables the damping caused by air radiation of the plate to its surrounding environment

» On/Off

Click the Air label to enable the damping

» Damp

Changes the frequency of the air radiation relatively [None~x10]

» Frequency

Changes the frequency of the air radiation relatively [/100~x100]

6 ► Band Decay

Control the RT60 decay-time of each octave band

» On/Off

Click the Band Decay label to enable/disable

» Decay Points (Turquoise line on the display)

Click-Drag the control points to draw - Right-click to reset

7 ► Global Controls

» Drive

Applies a preamp saturation stage to the signal before hitting the plate [0~100%]

» Pre-delay

Delays the reverberated signal [0ms~1s]

» Width

Increase the stereo spread [0~100%]

» Reverb Gain

Sets the output gain of the effect [-20~20dB]

Interface - Expanded View - EQ Editor



1 ▶ EQ/Decay Toggle

Click enable to show the EQ and real-time analyzer

2 ▶ Real-Time Analyzer

Switch to enable real-time frequency analyzer

- Purple: Input signal
- Metal color: Output signal

** output signal color will change based on selected plate material*

3 ▶ Display Editor

Drag the lines in the display to set the EQ curves

- Blue line: Low cut
- Turquoise line: Band EQ

4 ▶ Low Cut

A low cut shelving filter

» On/Off

Click the Low Cut label to enable/disable

» Gain

Controls the attenuation of the low cut shelving filter [-40-0dB, same as Low Cut knob in the compact view]

» Frequency

Controls the crossover frequency of the low cut shelving filter [10-200Hz]

5 ▶ Band EQ

A 12-band octave spline equalizer

» On/Off

Click the Band EQ label to enable/disable

» EQ Points *(Turquoise line on the display)*

Click-drag to draw - Right-click to reset

Technical Notes

The Material and Plate Controls

The material of the plate influences numerous parameters, most notably on the decay responses.

Materials and decay have been calibrated using the published properties of metal sheets alloys and with measurements from vintage EMT140 and EMT240 units in a recording studio located in Paris. [Steel and Gold]

Geometric Control

To make the various materials easier to deal with, the dimensions are expressed in steel-equivalent units. For example, for a gold plate with dimensions 2x1m "equivalent steel" is effectively 30x15cm.

The plate area mainly influences modal density and frequency. The greater the area the higher the density and the lower the frequencies. The shape of the plate influences mode distribution. A square shape will have a roughly even distribution, a long and small shape sounds like a beam, producing metallic and dispersive "chirped" transients like a spring reverb.

Quality

Plate's performance is based on the number of modes, and uses an intelligent mode pruning algorithm that keeps the most important modes in order to achieve the best sound quality for a given CPU budget.

A mode is a voice of reverberation similar to the polyphony of a synthesizer. Unlike synthesizers, Plate's polyphony ranges from 3,000 voices at "Low" to 20,000 at "Insane".

Quality control can have a tremendous impact on CPU consumption. Plate has been highly-optimized to make use of the latest SIMD instruction sets available (SSE, AVX, AVX2), and uses adaptive multi-threaded, multi-core rendering in order to finish the rendering in the shortest amount of time independently of the current CPU load.

IO Position

Contrary to the original plate reverberation units, physical modeling allows you to change the input and listening points as well as having two input points for true stereo reverberation.

As the wave propagation in a plate is very dispersive and frequency dependent, the exact placement of inputs and outputs is less important than in a standard room to avoid phase cancellation. Greater distance between I + O makes the transients dispersed like a spring. Placement near the edge results in a nasal and thin sound. Placement near center results in a full sound.

The Decay

All decay times are expressed using the RT60 decay time definition, i.e. the time it takes for the reverb intensity to decay of 60dB.

On the original Plate reverb units, the decay time was controlled by applying a damper made of a porous material (like foam, having a frequency dependent absorption coefficient) closer to the plate to reduce the decay time. Our model reproduces this behavior: the decay editor allows to fine tune the undamped/"infinite" plate decay response, while the Decay parameter controls the damper.

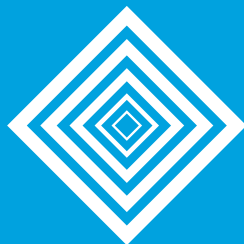
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PLATE

CUSTOM-SHOP ELECTRO-MECHANICAL REVERB

Credits and Thanks

Produced by UVI

DSP

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Software

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Rémy Muller

GUI

Nathaniel Reeves

Preset Design

Alain Etchart

David G (MixBus TV)

Dave Isaac

Rémy Muller

Simon Stockhausen

Documents

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Nathaniel Reeves

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UVI.NET