# LESON

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INSIDE THE SOUND

DeepStereo Upmixer

Free your music from classic stereo
by projecting it into an immersive 3D space
while preserving its authenticity

VST3 – AU – AAX

Windows – Mac OS

music
UNIT

Using a binaural synthesis process, the **DeepStereo Upmixer** plugin transforms in real time any mono or stereo audio content into universal 3D audio media compatible with any standard two-channel listening system, without altering the original timbre.
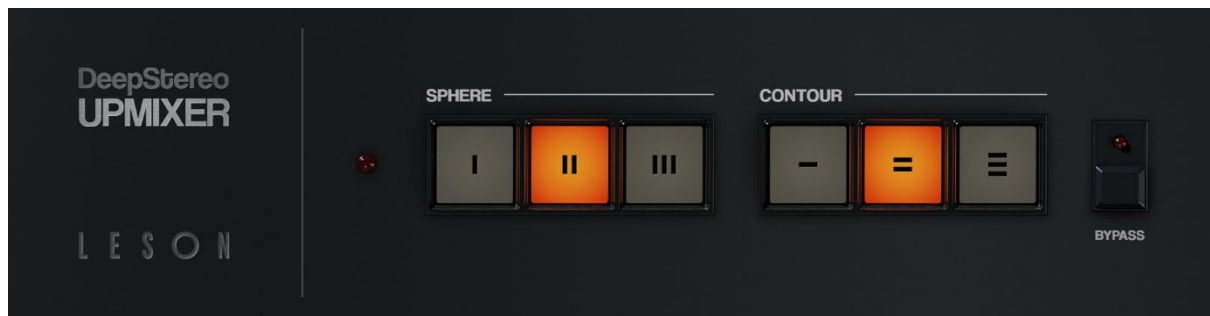
Its use is extremely simple, and applies equally well to an instrument track or group of instruments, as to the master section of a mix or mastering. By combining just two settings - "**Sphere**" and "**Contour**" - you can adjust the spatial immersion effect, from subtle dosage to total envelopment.

DeepStereo & MyBeeKnows

Binaural sound has always faced a major challenge: on the one hand, achieving a convincingly immersive audio experience with both headphones and speakers, and on the other, respecting the timbre and stereophonic quality of the original sound. Thanks to **MyBeeKnows** - **Leson**'s revolutionary patented technology - the equation has now been solved, with **DeepStereo**.

DeepStereo is a stereo audio format based on **MyBeeKnows** technology, developed over more than a decade in partnership with the **Conservatoire National Supérieur de Musique & de Danse de Paris**, the **École Polytechnique** and the **Centre National de Recherche Scientifique**. **MyBeeKnows** is a software program that retranslates all types of mono, stereo or 3D audio signals and files into a universal immersive format readable by any standard device. It uses a unique patented signal processing method to implement a binaural synthesis device that does not alter the timbre of sound sources. This makes it one of the leading 3D audio rendering engines on the market.

The **DeepStereo Upmixer** plugin delivers audio rendering in **DeepStereo** format. In this particular context, **MyBeeKnows** is at the heart of a set of processes specially dedicated to the creation of 3D immersion.

Operation & settings

The **Sphere** and **Contour** settings are designed to adapt to all types of audio content. Figure 1 below shows a diagram of the signal treatment process. The settings allow you to control the quantity and quality of immersive rendering.
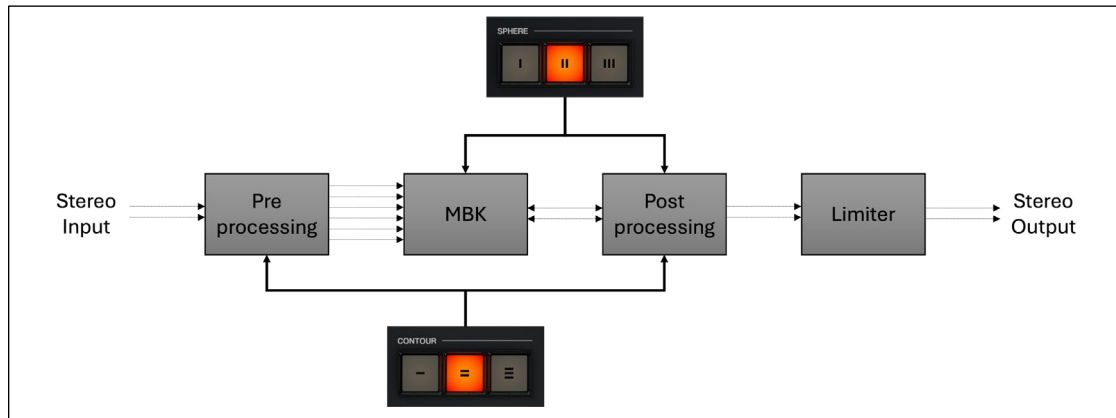

Figure 1 - DeepStereo Upmixer diagram

The **Sphere** setting controls the size of the "immersive bubble" and the position of the listener in relation to it:
Sphere I: the listener faces a moderately-sized soundstage
Sphere II: the listener stands at the threshold of a more enveloping space
Sphere III: the listener is at the heart of a totally immersive space

The **Contour** control modulates the sensation of space:
Contour I: an almost imperceptible effect, serving as a simple stereo image reinforcement
Contour II: precise, subtle ambience, effective on most audio sources
Contour III: a room-like effect, useful for enhancing sources that already have a pronounced sound space

The combination of **Sphere** and **Contour** effects is left to the user's discretion, depending on the sound material to be processed. Each combination preserves and enhances the audio quality of the original source.

At any time, the **Bypass** button can be used to compare the original sound with the processed sound.

Limiter

To counter any clipping that may result from the addition of 3D space to the original signal, a specially designed peak limiter is implemented just before the plugin's final output. This limiter is configured to act primarily in the most extreme situations - for example, where an already mastered signal (with a high LUFS level) is sent at nominal level to the plugin's input.

Monophonic compatibility

The **DeepStereo Upmixer** process guarantees excellent monophonic compatibility for the vast majority of audio sources with most setting configurations, such as: I+I, I+II, II+I, II+II. The maximum III+III setting may sometimes give rise to a slight increase in low frequencies during any post-processing monophonic summation; this is naturally due to the depth of the sound field and the addition of overall energy generated by the immersive bubble.

Destination

As the patented **MyBeeKnows** binaural technology fully respects the timbre of the original source, the final immersive 3D audio result after application of the DeepStereo Upmixer remains fully compatible with all the usual uses of a stereophonic file: headphone and loudspeaker listening, streaming platforms, compact disc, vinyl, radio, TV, film, Internet videos, social networks.

About Leson by Music Unit

Leson is **Music Unit**'s haute couture sound studio, dedicated to designing unique and innovative audio solutions. Motivated by our long-standing partners - artists, sound engineers and electronics manufacturers - who want us to translate our know-how into self-sufficient tools accessible to all, we are developing a portfolio of patented inventions and high-end audio products aimed at both content producers and broadcasters.

Music Unit is a French music and sound creation studio founded in 2004, which disrupts the music and audio industry through creativity, innovation and technology.

Music Unit brings together artists, producers and engineers who master emerging audio technologies - Spatial Audio, AI, VR, AR - and want to share their desires, knowledge and talents.

Our mission is to offer audiences the opportunity to enjoy new artistic experiences.

Contact

Music Unit
28 Rue Kléber
93100 Montreuil
Grand Paris – France

support@musicunit.fr

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