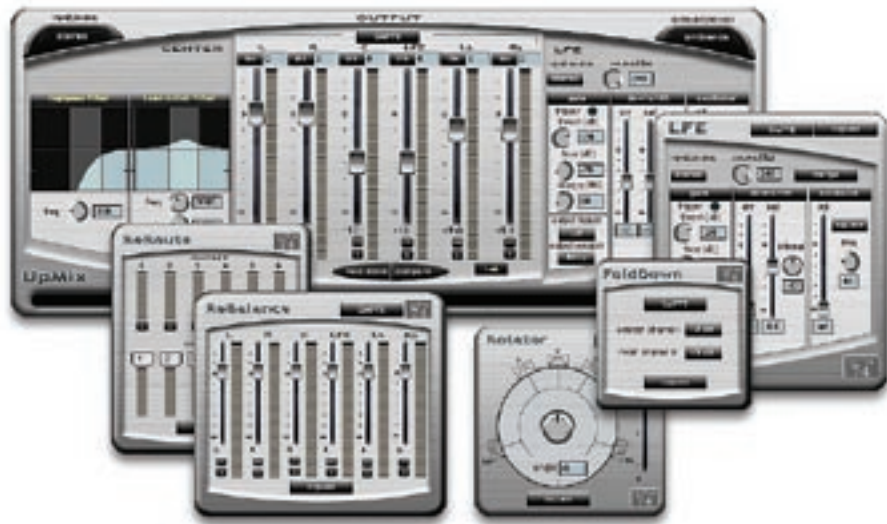


# Cycling 74 Upmix

In an increasingly multichannel world the need to repurpose stereo into a meaningful

5.1 representation is a real one. **ROB JAMES** fixes on his bicycle clips and heads for the open road.



**5.1 IS HERE TODAY** and it isn't going away. This poses a number of challenges to audio professionals, just as the advent of stereo and Dolby Stereo did a few short years ago. Re-purposing mono material for stereo is at best an interesting curiosity; at worst the results can be horrendous. Fortunately, with true stereo material there is much more to work with and most engineers dealing with surround mixes have a number of strategies for producing convincing surround from stereo sources. The one thing all of these have in common is the time they take to set up and fine tune.

Combining the bits and pieces into a plug-in is an attractive notion even though set up and tuning will still be required. Cycling 74, the company responsible for Upmix, is a new name to me. Loosely based in San Francisco, Cycling 74 is one of the new breed of companies with a distributed workforce, only possible thanks to the net.

Upmix is in reality a suite of plug-ins. The eponymous Upmix leads a pack consisting of Rotator, which enables a 5.1 mix to be moved in a circular fashion, and ReRoute, which enables output channel routing to be changed to match your system's internal routing. The others are subsets of the full Upmix plug-in. FoldDown is a compatibility aid for checking the effect of folding a mix down to stereo and ReBalance simply provides a set of faders for each of the surround channels. The last member of the gang is LFE-6chan, which is a low-frequency generator/adjuster.

The Upmix bundle retails for US\$495 and currently works with Nuendo, Cubase SX, Motu Digital Performer (AU) or Digidesign Pro Tools TDM (RTAS). In the fullness of time other manufacturers are likely to make their VST support compatible with surround plug-ins, for example Cakewalk's Sonar and Apple's Logic. Upmix uses the Pace iLok challenge and response security system, as used by Waves and others. The authorisation can be transferred to an iLok USB dongle on request.

All the plug-ins have a channel format selector switch that offers a choice between SMPTE, DTS or Film. This affects the channel routing through the plug-in and determines the input and output formats.

A bypass or compare switch is another common factor, enabling the processed signal to be compared with the original.

Upmix itself consists of five modules. Input selects the input type. Center is for the generation of a centre channel from a stereo (or mono) source and tuning the result. Surround Process generates and adjusts the surround channels. LFE generates and tunes the LFE channel and Output Levels provides faders, delays and monitoring control of the resultant surround output.

Input offers a straight choice between stereo and mono (Left only), Center sums left and right with adjustable LF roll-off and a single band parametric EQ to help pull things into the centre. Surround offers a choice of processes to produce the surround channels with a depth control where appropriate. A variety of algorithms are provided to cater for a wide range of circumstances. Used in conjunction with the delays (judiciously if folddown compatibility is an issue) these should cover the majority of requirements.

The LFE generator also offers a choice of input source. Stereo input can sometimes result in unwanted cancellation and consequent reduction in LFE level, hence the choice. A source filter sets the cut-off frequency for the source and gate trigger. The Gate governs the input to the Dry, Wet and Oscillator sections thus acting as an oscillator trigger. The oscillator itself allows a static tone to be added to the LFE signal with choice of sine or square wave, frequency and volume. Downshift adds a pitch-shifted version of the input signal to the LFE output. Shift is in semitone increments for -1 to -24. The Dry fader passes the filtered LF signal regardless of the downshift setting and Wet controls the proportion of downshifted signal. An output filter limits the LFE output to the relevant specification (80Hz or 120Hz) with a 24dB per octave High-pass filter at 20Hz. Since the LFE generator is capable of producing extremely low frequencies the Low Cut button invokes a 48dB per octave filter at 20Hz.

Rotator enables the five full-range channels of a 5.1 mix to be rotated around the centre point in five-degree increments. Panning is equal power with no divergence control. At 90 and 270 degrees this can result in

overload, therefore an overall gain control is provided.

ReRoute is a simple switcher that can be used to rearrange the channel order. Since there are a multiplicity of surround channel formats this can fix annoying routing problems quickly but presets are provided for all the common conversions. Momentary solo buttons offer a quick check on what is where. Upmix uses the 'standard' ITU/SMPTE format internally, i.e. L, R, C, LFE, Ls, Rs.

ReBalance is a six-channel level control with the same extras as the other plug-ins. It's useful for re-balancing an existing interleaved mix without the necessity to split it out into individual mono files.

The stand alone FoldDown module offers a useful guide to downmixing results and can also be used to produce a stereo downmix for distribution. It offers user adjustable parameter presets that follow the Dolby metadata standards. Two further controls determine the level of the centre and rear channels with -3dB, -4.5dB and -6dB options for the centre channel and -3dB, -6dB and infinity for the rear.

LFE-6chan is the LFE section of Upmix with some bells and whistles. For a start, LFE-6chan can accept a full six channel input meaning it can modify an existing LFE channel while passing the other channels intact. Input source choices are Stereo, Mono (L only or the LFE channel). A Merge button adds generated LFE to the existing LFE content.

The headline plug-in — Upmix — is undoubtedly the star of the show. It produces a credible surround field from a variety of sources with minimum effort. The LFE generator is very helpful if used carefully. The rest of the bundle is a nice bonus, although I cannot envisage too many circumstances where I'd want to be using Rotator. There is plenty of scope for a lengthy philosophical debate on this subject, but not in this article. In short, if your work uses a lot of stereo material for 5.1 then Upmix is well worth a demo. ■

**PROS** Relatively painless re-purposing of stereo into 5.1; easy to use; useful tools.

**CONS** Only works with certain platforms; LFE generator could be more sophisticated with modulation, envelope, etc.

**EXTRAS** Octirama is a dynamics plug-in for 5.1 with proprietary DSP technology that is said to preserve the surround image and is available exclusively for Pro Tools TDM.



Other plug-ins from Cycling 74 include the Pluggo collection of more than 100 real-time plug-in audio effects and virtual instruments, Mode is a set of plug-ins that combine classic synthesis and effects technique with 'performance control', and Hipno is a set of more than 40 effects and instrument plug-ins featuring the Hipnoscope user interface.

## Contact

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