

# X-FX

MANUAL + USER GUIDE



# X-FX

## Obligatory Legal Stuff

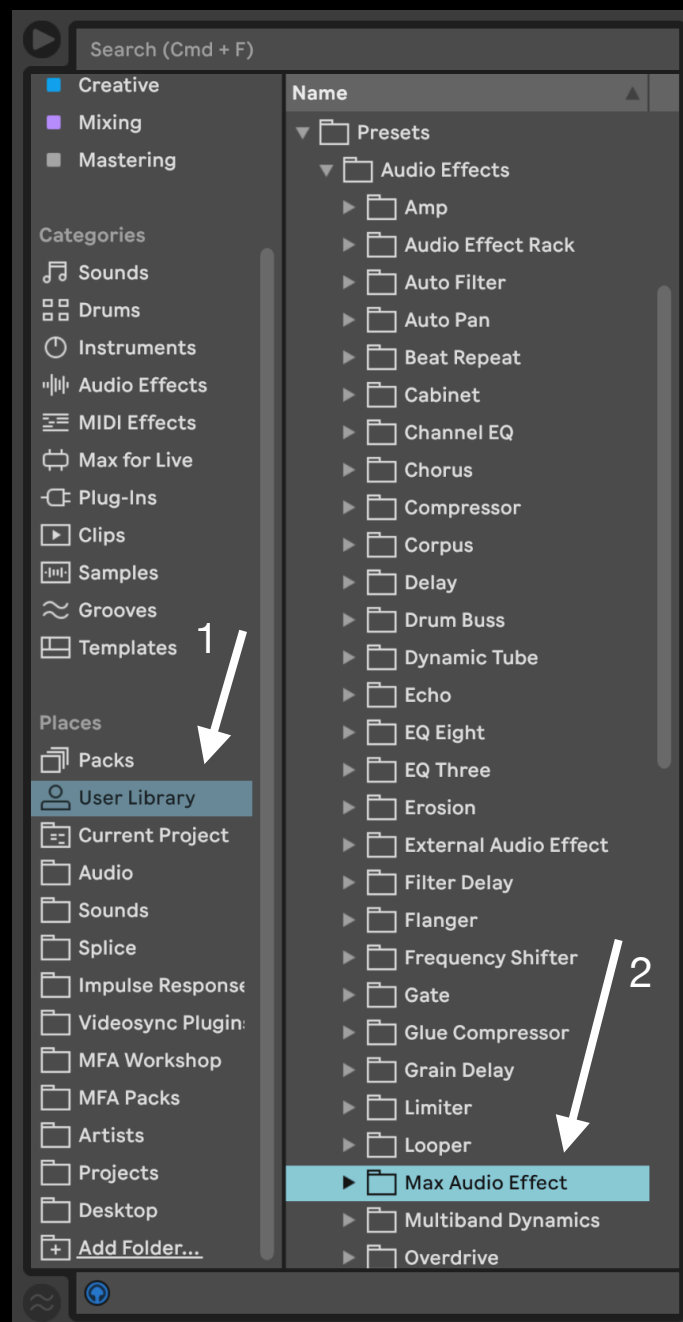
MANIFEST AUDIO

*Thank you for downloading this creative Max for Live device!*

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## Installation Instructions



**X-FX requires Live Suite with Max for Live installed; we strongly recommend Live 10.1.x or higher with Max 8.1.x or higher.**

To install X-FX, first double-click to decompress the ZIP archive it arrived in. Presumably you've already done this, because you're reading the manual, also included in said ZIP — good job!

From Finder (Mac) or Explorer (Windows), drag the entire MFA X-FX folder to the User Library in the Places section of Live's Browser (Arrow 1 pictured left). This will copy the required files to your User Library. We recommend dragging it to the Max Audio Effect subfolder of the User Library Audio Effects folder (Arrow 2 pictured left).

In order for the included presets and racks to function properly, it's important the included folder structure remain intact, so wherever you place it, be sure to drag the entire folder together.

Once installed, we might humbly suggest adding it to an appropriate Browser Collection, if applicable.

# X-FX

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## Overview

Designed to enhance harmonic coherence and provide new approaches to signal processing while enabling interactions between otherwise unrelated musical elements, X-FX is comprised of 9 Max for Live audio effects.

In addition to standard timing controls, each effect can be controlled melodically with a MIDI note dial or played via X-Relay MIDI input. Better yet, when played in a harmonic mode, they can be constrained within 69 scales in any key. This scale and key can be selected locally within the device, via the Global Hub utility that comes bundled with it, or using your project's scale and key in Live 12 or higher.

Tuned comb filtration, frequency modulation, delay, bit reduction, resonant filtration, and harmonization are all within your grasp. Time-based effects such as X-Delay and X-Reverb can be controlled with a highly-flexible base rate and multiplier combination, allowing for new levels of rhythmic precision and alignment.

Powerful modulation is provided by the included Mod Squad bundle, with 73 presets and racks showcasing how these work together with the included X-FX. The examples shown on the following pages are designed to give a variety of examples as to how X-FX might be used from extreme creative manipulation, to reactive surgical mix enhancement.

**Input**

0.0 dB

**Threshold**

-inf dB

**Above**

**Attack**

1.00 ms

**Decay**

50.0 ms

This is the input section featured on all X-FX devices. Each device can be configured so that only signal either above or below a specified threshold amplitude or crossover frequency will be passed to the effects. This allows you to just punctuate the peaks of a signal smoothed with attack and decay times with your chosen effect — or only apply processing to signal below a certain frequency.

Here is the output section featured on all X-FX devices. The effected signal can be balanced with a standard dry/wet blend, or set to a unique interpolation mode where signal is toggled between the dry input and current wet setting whenever it exceeds the specified input threshold level. This is also where you set the scale and key of the effect in applicable modes, whether it's controlled globally or locally, and a glide time between MIDI note values when using notes mode for smoother value changes. Each effect also comes with optional built-in limiting for sonic safety.


**Output**

0.0 dB

**Dry/Wet**

50.0 %

Chrom... ▾

C ▾ 

10.00 ms

**Limit**

0.0 dB



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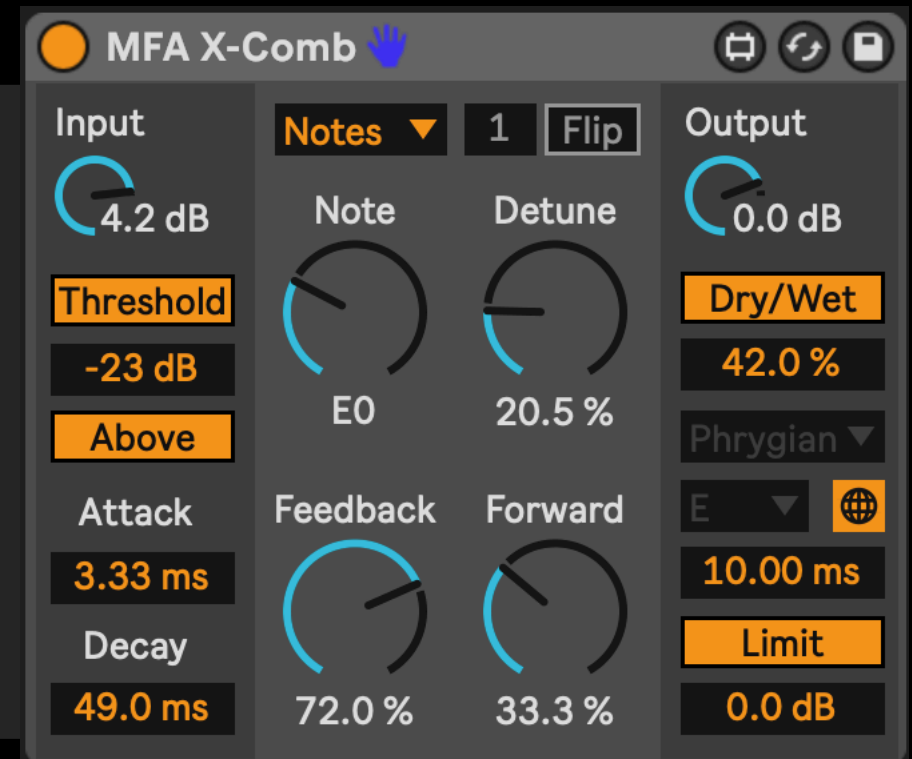
## X-Comb & X-Delay

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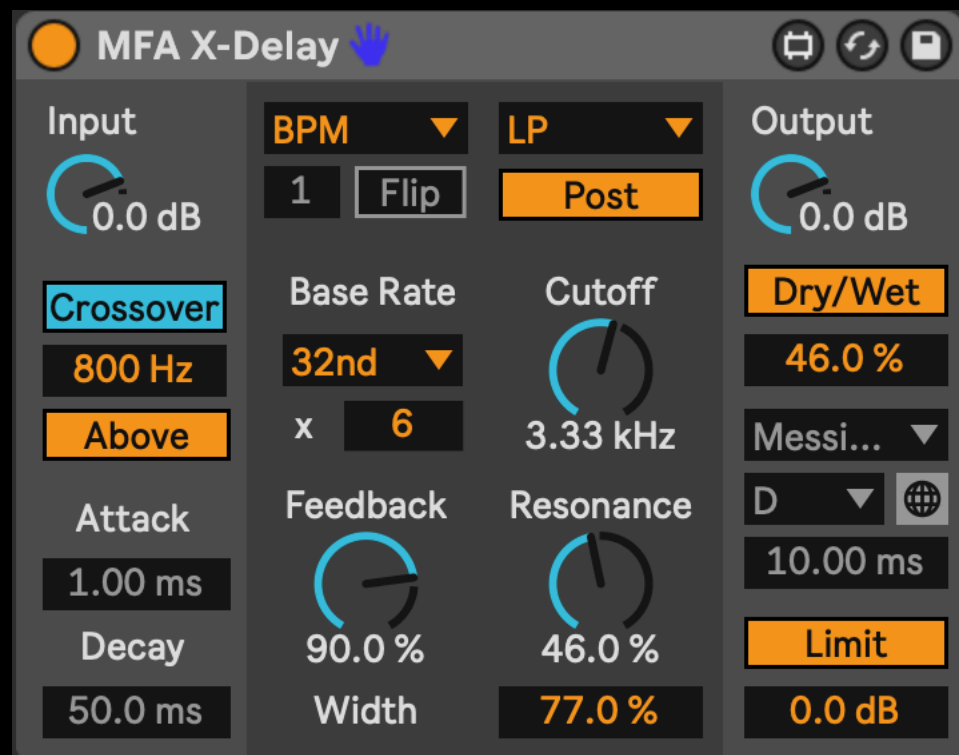
**X-Comb** provides comb tooth filtration with both feedback and feedforward. It can be controlled with a MIDI note dial, pure millisecond timing, or played via incoming MIDI note and then transposed in Relay mode, all with optional stereo detuning.

In this example, input is being boosted by 4.2 dB; then, peaks above -23 dB will be smoothed with a 3.33 ms attack and 49 ms decay before being fed to the comb filter. Set to notes mode, the comb filtration will play the MIDI note E 0 and remain in the globally set E Phrygian scale with 10 ms of smoothing.

The effected signal will be blent at 42% with the dry signal, with limiting engaged. The comb filtering will have 72% feedback, 33.3% feedforward, and just 20.5% stereo detuning applied.



The screenshot shows the MFA X-Comb plugin interface. It features a dark grey background with various controls. On the left, the 'Input' section has a gain knob at 4.2 dB, a 'Threshold' knob at -23 dB, and a mode selector set to 'Above'. Below these are 'Attack' (3.33 ms) and 'Decay' (49.0 ms) knobs. The center section has a 'Notes' dropdown set to 'E0', a 'Detune' knob at 20.5%, and 'Feedback' (72.0%) and 'Forward' (33.3%) knobs. On the right, the 'Output' section has a gain knob at 0.0 dB, a 'Dry/Wet' knob at 42.0%, a scale dropdown set to 'Phrygian', a key dropdown set to 'E', a smoothing knob at 10.00 ms, and a 'Limit' knob at 0.0 dB. The title bar reads 'MFA X-Comb'.



The screenshot shows the MFA X-Delay plugin interface. It features a dark grey background with various controls. On the left, the 'Input' section has a gain knob at 0.0 dB, a 'Crossover' knob at 800 Hz, and a mode selector set to 'Above'. Below these are 'Attack' (1.00 ms) and 'Decay' (50.0 ms) knobs. The center section has a 'BPM' dropdown set to '1', a 'LP' dropdown set to 'Post', a 'Base Rate' dropdown set to '32nd', a multiplier 'x 6', a 'Cutoff' knob at 3.33 kHz, 'Feedback' (90.0%) and 'Resonance' (46.0%) knobs, and a 'Width' knob at 77.0%. On the right, the 'Output' section has a gain knob at 0.0 dB, a 'Dry/Wet' knob at 46.0%, a scale dropdown set to 'Messi...', a key dropdown set to 'D', a smoothing knob at 10.00 ms, and a 'Limit' knob at 0.0 dB. The title bar reads 'MFA X-Delay'.

**X-Delay** is a flexible, multi-function digital delay with built-in filtration and extreme feedback options. Delay times can be controlled in MIDI notes, milliseconds, BPM rates, or played via incoming MIDI note and then transposed in Relay mode.

This example shows X-Delay in BPM mode, with a base rate of dotted 32-notes multiplied by six. In crossover mode, only frequencies above 800 Hz will be sent to the delay line. With 90% feedback, delay taps will be sent to a low pass filter at 3.33 kHz with 46% resonance and stereo width exaggerated to 77%.

The scale and key are irrelevant in BPM mode and therefore deactivated, but would otherwise inherit the current global scale of D Messiaen 3. The delay effect signal will be blended at 46% with the dry signal, with safety limiting engaged to help control extreme feedback.

# X-FX

## X-Filter & X-FM

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**X-Filter** offers resonant multimode (Low Pass, Band Pass, High Pass, or Notch) filtration controlled by MIDI note dial in Notes mode, frequency in Hertz mode, or MIDI note input with transposition in Relay mode.

In this case, signal below the input crossover value of 333 Hz will be notched out at a pitch 12 semitones, or one octave, below the MIDI notes it receives from an instance of X-Relay via Relay 3, with 42% resonance.

These notched frequency removals will conform to the globally specified E Persian scale, with changes to the notch value gliding smoothly at 18 ms.

The Relay-notched frequencies below 333 Hz will be blended at 50% with the unfiltered dry signal above 333 Hz. Limiting is bypassed.



**X-FM** allows you to apply frequency modulation to any signal with a selection of oscillators — Sine, Saw, Pulse, Triangle, Noise — to modulate its own frequency (Self), or harness any other signal in your project as an FM source (External).

Aside from Noise, Self or External modulation sources, oscillator pitch can be set via MIDI note dial in Notes mode, frequency in Hertz mode, MIDI note input with transposition in Relay mode.

In this example, signal below -23 dB will be modulated at 64% with a 9 ms attack slope and 81 ms decay. A drum rack on track 1 (Kit) will be harnessed as the modulation source. This will be blended at 67% with the unmodulated signal above -23 dB blended back in at 33%. Scale and key are disabled as irrelevant with an External source. Limiting is engaged.



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## X-Harmonizer



**X-Harmonizer** allows you to autotune or shift incoming signal pitch within a selected scale and key.

Along with advanced tuning settings, it also features a pair of optional harmonizer shifts that can be panned, blent, and detuned, while also conforming to the selected scale and key.

With Tuning at 100%, processed signal will be fully retuned according to its settings — but this can induce some latency, which can be addressed by compensating via track delay.

In the example above, all incoming signal will be processed via the globally-set A Adonai Malakh scale, and output 100% wet with safe limiting on.

Using Shift mode, signal will be 100% tuned to MIDI input via Relay 7. With flip mode engaged, the MIDI note pitches will be inverted on the keyboard; to compensate for higher notes as a result, the output is transposed 36 semitones, or three octaves, below the flipped Relay 7 MIDI input.

Quality is set to Better which may use more processing but provide more lush results. With Deviation at 3.33 cents there will be some allowance for humanistic perturbations in the performance even though correction is at 100%; sibilance and ambience are left at their default.

Finally, two shifts are applied. Shift 1 is set to 5 semitones below input, blended 77% wet at 42 left, with 0.23 Hz of detuning, while Shift 2 is pulled 7 semitones up, detuned 0.11 Hz below, at 33 right and blended 64% wet.

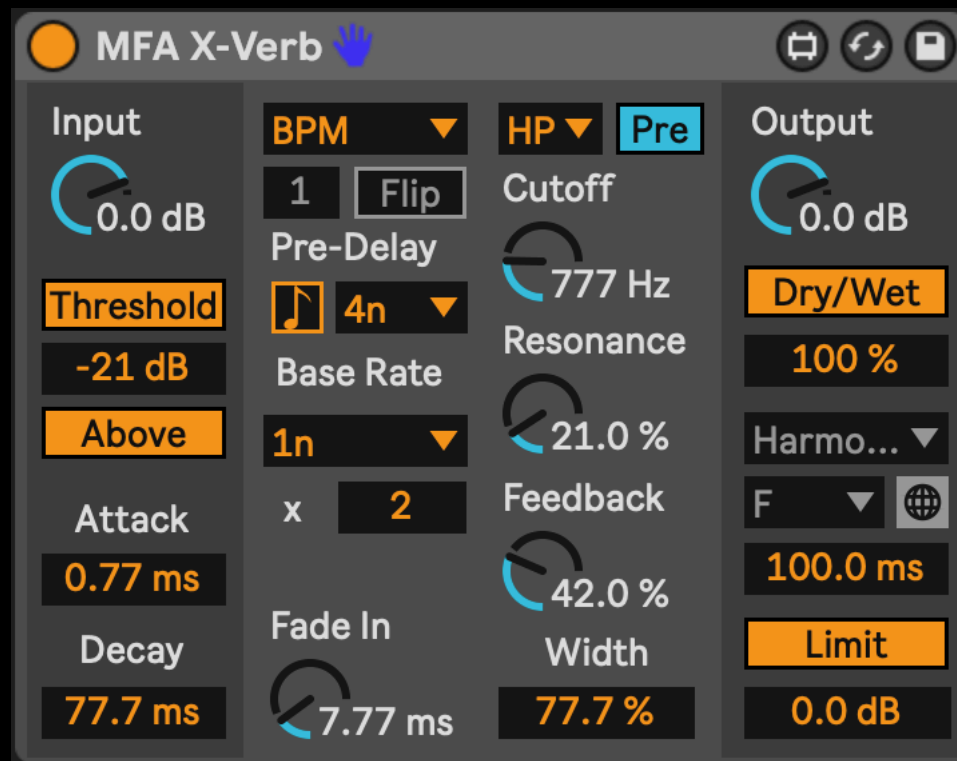
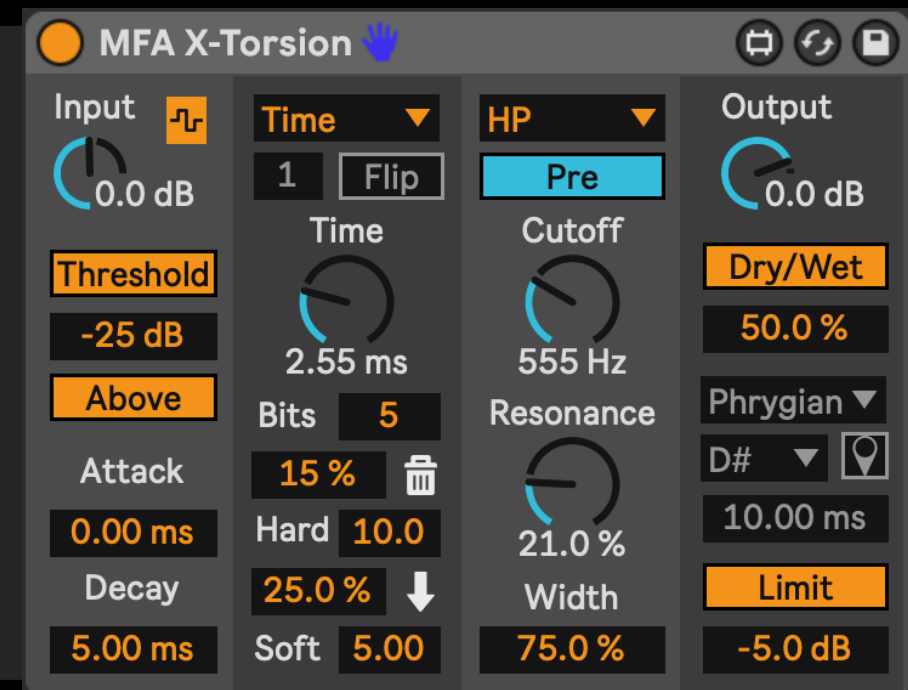
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## X-Torsion & X-Verb

**X-Torsion** is a multifunction digital distortion effect, featuring sampling distortion, bit reduction, stochastic decimation, downsampling, and separate hard and soft clipping circuits. These pass through a dedicated multimode filter bank with stereo exaggeration.

In this example, short, instantaneous peaks above -25 dB decay over 5 ms before being fed to the high pass filter in pre-distortion mode, ensuring only frequencies of 555 Hz are fed to the distortion. A 2.55 ms sampling distortion is reduced to 5 bits with 15% decimation, 10% hard clipping, 25% downsampling, and 5% soft clipping with width expanded 75%.



**X-Verb** is a potent algorithmic reverb with a built-in feedback circuit and multimode filtration. Reverb decay time can be set in MIDI notes, milliseconds, BPM synchronized intervals, or transposed from note pitch input via Relay.

In this example, with the high pass filter circuit set to pre-reverb insertion, only signal exceeding -21 dB and also above 777 Hz will be processed for reverberation. Place on a send, the balance is set all the way wet, with limiting engaged to control excessive feedback, which should be fine at the current setting, 42%.

The pre-delay stage is in synchronized mode and set to a quarter note. The decay time is set to whole notes with a multiplier of two, so it will last 2 bars at the current project BPM. When triggered, it will fade in over 7.77 ms. The fade in parameter can be useful for reverse reverb effects at higher settings. Width is exaggerated to 77.7% with 21% resonance added.



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## X-Connect & X-Divide

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**X-Connect** allows you to intercept or combine audio from different tracks anywhere in a set via the central selection dropdown menus.

In this example, the external source is selected for input processing. With crossover mode and below engaged, only signal below 333 Hz will be played from the external source, but with dual crossover mode on, the current track will only play frequencies above 333 Hz. The blend between the current track and the external input is set to 42%.

With the viewer on, the current track is yellow while the external input is blue. The external input is panned 23 left, the current track 13 right, and the output stereo balance untouched at center with limiting on for safety.

**X-Divide** provides access to similar input gate or crossover processing as the other X-FX devices, with discrete control of both above and below layer gain and panning, plus a blend between them.

Along with the attack of the above segment and decay of the below segment is a transition dial that reflects simultaneous decay of the above and attack of the below phases. In crossover mode, a notch parameter allows for exaggeration of the gap in frequency between the two layers, while resonance boosts both cutoff values simultaneously.

In this example, blue signal below -18 dB is boosted by 4.2 dB, while yellow signal above -18 dB is reduced by -16 dB and panned 21 right, with limiting engaged and fairly short transition times throughout.

***I'm constraining eligible effect parameters to my project scale and key via Global Hub, but the end result isn't harmonizing — why not?***

The pitch-related parameters are quantizing corresponding millisecond or hertz values to notes in the current scale and key, but that doesn't necessarily mean the resulting audio will be tuned to that scale and key; this is entirely dependent on the source material being processed so results may vary.

***I want to control the Note or Transposition value with a Rack macro, automation, MIDI controller, or a modulator — but it doesn't work, how do I fix this?***

Due to an issue with Max for Live, in order to control pitched Note or Relay Transposition values outside the effect, you must set the device Glide time to 0.00 ms, after which all the above described methods will work as intended.

***How do I use Relay mode with my X-FX?***

Place an instance of X-Relay on the desired MIDI source track. Set it to Relay mode and select the desired Relay conduit. Then, put your X-FX device into Relay mode and set it to receive on the same conduit. Transposition might not register until it has received a MIDI note from the X-Relay source.

***I prefer certain device in my set not conform to Global Hubs's scale and key — is this possible?***

Simply click the globe icon to switch the X-FX to Local pin mode so it will ignore Global Hub scale and key messages; this is particularly useful for percussive instruments that should remain Chromatic. Toggling from Local back to Global mode will automatically force the device to inherit Global Hub scale and key settings.

***X-FX looks small — how do I make it bigger?***

In the Look/Feel tab of Live's Preferences pane, simply increase the Zoom Display percentage slider to 125% or 150%.

***Where can I learn more about X-FX?***

All X-FX parameters are Info View enabled, so just open Live's Info View and hover your mouse above any X-FX element you want to learn about.



*Thank you for supporting us – we hope this device inspires your creativity!*

For more information, video tutorials, and other devices, please visit us online at: **manifest.audio**

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