ETCH

OPERATION MANUAL

fxpansion

Table of Contents

1   Introduction

Etch is a versatile dual filter effect with distortion and compression. It features extensive modulation possibilities using the powerful TransMod modulation system.

It includes extensive MIDI control and automation as well as a secondary side-chain input used for various functions (within hosts which support these features)

Global controls

Etch features a number of global controls and settings along the top of the plugin interface. These controls are described in the next section.

Audio signal path

Etch's audio signal path comprises 5 modules:

- **Distortion module**

A number of waveshaping distortion functions are available to overdrive or distort the signal.

Using the Pre/Post switch, this module can be placed before the filter sections to warm up the signal going in, or afterwards in order to beef up the signal coming out.

- **2 Filter modules: Filter1 and Filter2**

The 2 filter blocks can be routed in serial or in parallel. Each filter can be set to 1 of 4 Types, including a comb filter, with each type offering a number of different filter responses.

Each filter also has a dedicated cutoff frequency FM function that can use the input signal, secondary side-chain signal or the internal LFOs as a modulation source. This modulation occurs independently of the TransMod system, which operates at control rate only.

Both filter modules feature Input and Output level controls and can be panned anwhere in the stereo field.

- **Compressor module**

This module offers a simple 1-knob compressor, switchable between soft-knee and hard-knee modes.

- **Output module**

The Output module features controls for the final Level and for the Mix between input and output signals.

Internal modulators

Etch features 6 internal modulation blocks to animate Etch's audio processing modules:

- **Envelope module**

The Envelope generator responds to MIDI note C#-2 on MIDI channel 1 in order to generate an AHD envelope, with the decay curve adjustable between a linear and exponential shape.

See the Using Etch section for details on using the MIDI input functions.

- **2 LFO modules - LFO1 and LFO2**

Etch's LFOs can go into audio rates (up to 1024 Hz) for filter FM effects.

- **Envelope Follower module**

The Envelope Follower generates an AD envelope in response to detected transients either in the incoming audio, or the secondary side-chain signal (input 3-4).

Note that the process of routing audio to Etch's secondary side-chain input varies between hosts and may not be possible in some - please see your host's documentation if you are unsure how to accomplish this.

- **Sample+Hold (S+H) module**

The S+H module is a means of generating 'random' LFO shapes by acting on its internal noise signal. It is also possible for the S+H to operate on the secondary side-chain signal.

- **XY Controller module**

The XY controller provides an easy interface for controlling 2 control axes with the mouse. Like other modulation sources in Etch, each axis can be assigned to any number of Etch parameters with differing depths, so that radical timbral shifts are possible with simple user input.

TransMod modulation system

Etch's TransMod modulation system allows you to modulate most parameters within the plugin by the built-in modulators as well as by incoming MIDI note pitch/velocity, noise and a random generator.

MIDI control and host automation

Etch features a variety of MIDI control options which are described in the Using Etch section.

Using MIDI CCs, it is possible to:

- Adjust Etch parameters' initial values
- Adjust parameter modulation depths for individual parameters and TransMod modulation sources

You can additionally use MIDI notes for a variety of different functions.

In addition to MIDI control, it is possible to automate Etch's parameters with your host's built-in automation features.

Secondary side-chain input

Etch features a secondary side-chain input (input 3-4) which can be used for a number of purposes. See the Using Etch section for more details on using the side-chain input.

1.1   Global controls
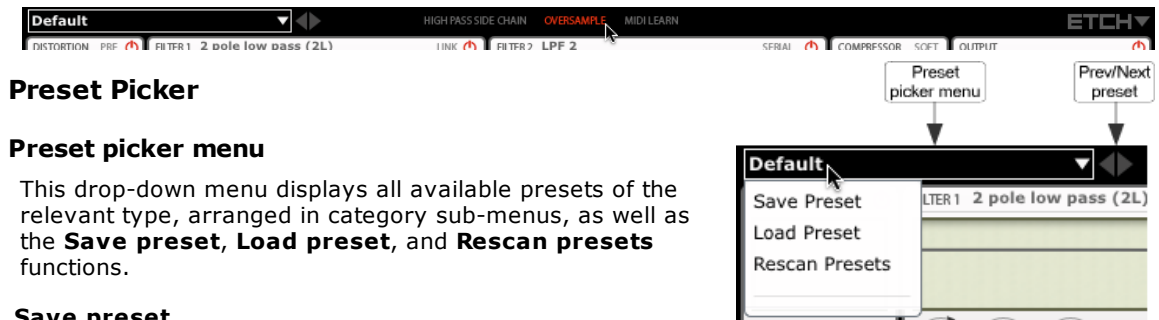
Preset Picker

Preset picker menu

This drop-down menu displays all available presets of the relevant type, arranged in category sub-menus, as well as the **Save preset**, **Load preset**, and **Rescan presets** functions.

Save preset

This function prompts you for a filename in order to save the current settings to disk. It is recommended that you save presets to the default folder that is shown so that they can easily be reloaded using the preset picker menu.

Load preset

This function allows you to browse to and load a preset from any location.

Rescan presets

The **Rescan presets** function scans the preset location for new presets you may have copied there since you launched Etch.

Prev/Next preset

These buttons sequentially step backward/forward through the current preset category.

High Pass Side Chain

This button applies a fixed high-pass filter at 120 Hz to the side-chain input which can lead to a better response with more bass-heavy input material.

Oversample

Enabling the **Oversample** button results in processing audio internally at a higher sample-rate, minimising aliasing artifacts. The sound quality is better but comes at the expense of higher CPU usage. Oversampling tends to make the biggest difference when using higher amounts of distortion and drive.

MIDI Learn

This button activates MIDI Learn mode, which allows you to map MIDI CCs (continuous controllers) to Etch parameters.

Etch Menu

About

This function displays Etch's version number and credits listing.

Reset Etch

This function resets Etch to its default state.

Show manual

This function opens the Etch manual in your OS's default PDF reader (usually Preview on Mac and Acrobat Reader on Windows).

Check for updates

This function checks the FXpansion website for any available Etch software updates.

Etch forum, Etch FAQ, FXpansion support

These functions open the Etch forum, FAQ and FXpansion support page in your default browser.
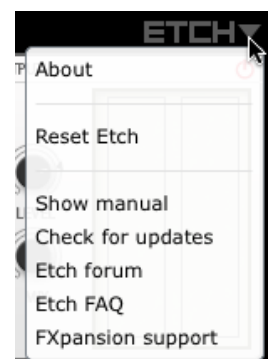
1.2   Using Etch in a project

Using Etch as an audio insert effect

It is possible to use Etch as an insert effect, although in many hosts it may not be possible to route MIDI notes and/or MIDI CCs to the plugin.

It is still possible to use your host's built-in automation features to control Etch - all Etch parameters are exposed to the host automation system.

It is not necessary to manually control Etch's filters over time - the built-in modulation devices such as the Envelope Follower, S+H and LFOs allow a huge number of parameter animation possibilities without requiring any real-time input.

Using Etch with MIDI control

Etch features extensive MIDI control features for interacting with Etch's parameters in real time.

MIDI control with Etch is *host-dependent*. Some hosts make it very easy to route MIDI notes and/or continuous controllers to Etch, but in some it may be necessary to run Etch as an instrument or MIDI-controlled effect on a separate channel and route the desired audio to its input(s).

Please consult your host's documentation for full details of its MIDI implementation for audio effect plugins.

2 types of MIDI input can be used in Etch, for different purposes:

MIDI note input

Etch responds to MIDI note input in a variety of performance-oriented ways.

MIDI channel 1: Envelope and LFO control

The following MIDI note octave numbers assume that C-2 is the lowest MIDI note (MIDI note 0).

Note	Note no.	Function
C#-2	1	Retrigger Envelope module
D-2	2	Retrigger LFO1 module
D#-2	3	Retrigger LFO2 module
F-1	17-43	LFO1 Rate: 64 bars (dotted) to 1/64th note (triplet)
to G1		[also retriggers LFO1 phase]
G#1	44-70	LFO2 Rate: 64 bars (dotted) to 1/64th note (triplet)
to A#4		[also retriggers LFO2 phase]

MIDI channel 2: MIDI note pitch tracking

When sending notes on MIDI channel 2, Etch generates a keyboard tracking source which is available using the Pitch TransMod source.

MIDI channel 3: hard-wired Filter1 frequency cutoff tracking and Envelope triggering

Notes on MIDI channel 3 are directly hard-wired to set the Filter1 Freq control according to note pitch. These notes also trigger the Envelope module.

MIDI channel 4: hard-wired Filter2 frequency cutoff tracking and Envelope triggering

Notes on MIDI channel 4 are directly hard-wired to set the Filter2 Freq control according to note pitch. These notes also trigger the Envelope module.

Velocity and Rand TransMod modulation sources

Whenever notes are input on any MIDI channel (1-16), values are generated at note-on for the Velocity and Rand TransMod sources.

MIDI CC input

Etch allows the ability to assign MIDI CC (continuous controller) messages to the following:

- its parameters
- parameter modulation amounts from individual TransMod modulation sources.

See the MIDI Learn mode section for full details on Etch's MIDI mapping functions.

Secondary side-chain input

Etch features a secondary input which can be used optionally in a variety of ways:

- FM Input source for Filter1 and Filter2
- An audio source to drive the Envelope Follower's peak detection circuit
- An audio source for the S+H module in place of its internal noise source

The side-chain input is *host-dependent*. Not all hosts are capable of allowing access to the side-chain input, which is technically the plugin's input 3-4.

For example, Logic allows you to access the side-chain input when running Etch as a regular insert effect (using Logic's 'Side Chain' drop-down menu), but not when using it as a MIDI-controlled effect, when Logic's Side Chain drop-down routes audio to the primary pair of audio inputs.

Please consult your host's documentation for full details of its implementation of multi-input plugins.
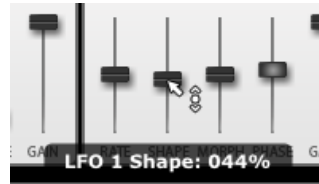
The side-chain input can be optionally high-pass filtered by enabling the **High pass side chain** button.

1.3   Etch interface conventions

Adjusting Rotary and Slider controls

Click and drag up/down the main part
**of the rotary control.**

Click and drag up/down the 'cap'
of the slider.

Etch's rotary and slider controls have further functionality for setting modulation depths in the
TransMod system.

Context menus

Context menus exist in several areas on the Etch interface. They are invoked by right-clicking
(you can also CTRL-click on Mac).

Editing a value manually using the control context menu
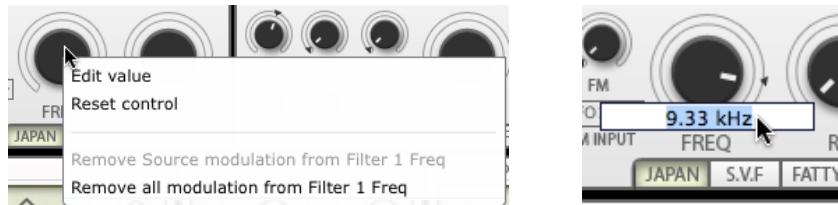
Right-click on any synthesis parameter to display the control context menu, which
contains the Edit value function for entering values via the keyboard.

This menu also contains the **Reset control** function to reset a parameter to its default value and
additional functions related to the TransMod modulation system.

Resetting a control to its default value

Double-click a control to reset it to its default value. This is also possible using the control context
menu with the **Reset control** function.

Drop-down menus
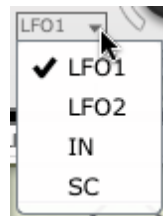
Drop-down menus are indicated by a downwards triangular arrow icon.
Click the drop-down box in order to display the menu.

Visualizers

Etch's audio modules and modulation devices (with the exception of the XY Controller) all feature a
Visualizer screen. The nature of each screen varies according to the function of the module.

2   Etch audio modules and signal path
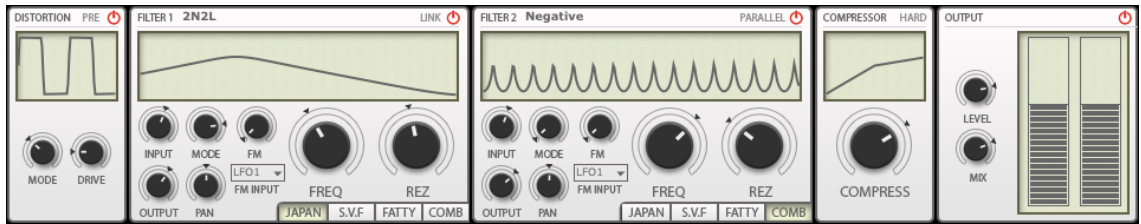
Etch's audio modules are arranged from left to right in the default routing configuration.

Distortion routing

It is possible to change the position of the Distortion module before (default configuration) or after the filter stages using its **Pre/Post** switch.

Filter routing

By default, Filter1 and Filter2 are arranged in series. It is possible to change this to a parallel routing using the **Serial/Parallel** switch on the Filter2 module. Parallel routing is useful for true stereo filtering.
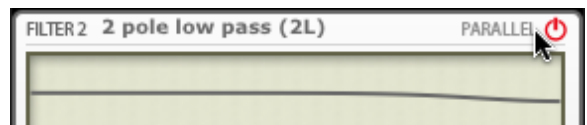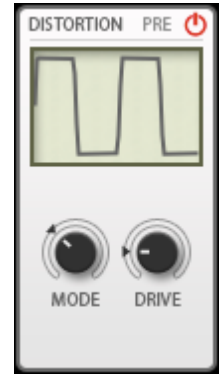

Power buttons

All audio modules except the Compressor feature a **Power** button - disable it to bypass the module. In the case of the Output module, the **Power** button activates/bypasses the entire Etch plugin.

2.1   Distortion

The Distortion module allows you to apply various flavours of overdrive and distortion to the signal, prior to or after the filtering stages.

The Distortion module's Visualizer represents the current input vs. output amplitude shape for the current settings.

Power button

The **Power** button activates or bypasses the Distortion module.

Pre/Post switch

This switch toggles the position of the Distortion stage before or after the filtering stages. The **Pre** setting is useful for livening up the signal before it enters the filter. The **Post** setting can be used to dial in some extra crunch after the filtering has been applied, especially useful when using high resonance settings which can reduce the audio signal level.

Drive

This control sets the amount of drive applied to the signal.

Mode

Each of the available **Mode** settings changes the input to output amplitude in a non-linear way, with each setting offering different timbral effects. The following response curves show the amplitude of the input signal vs. the output signal.

Diode

OTA

Op-amp

Half-rectifier

Shredder

Clipper

Tannin
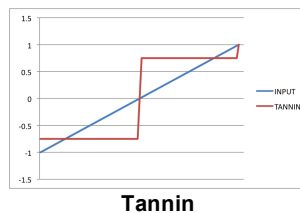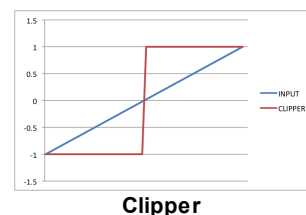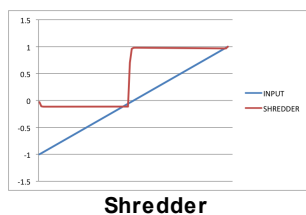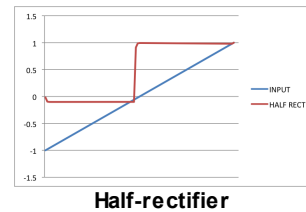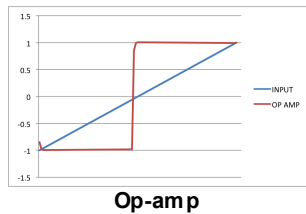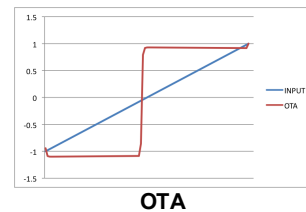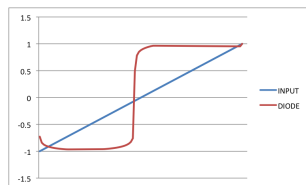
2.2   Filter1 and Filter2

The 2 filter modules are the heart of Etch. Each is essentially identical, although there are a couple of differences in terms of the **Link** and **Serial/Parallel** buttons for setting the routing.

The filter modules' Visualizers represent the current frequency response of each filter.
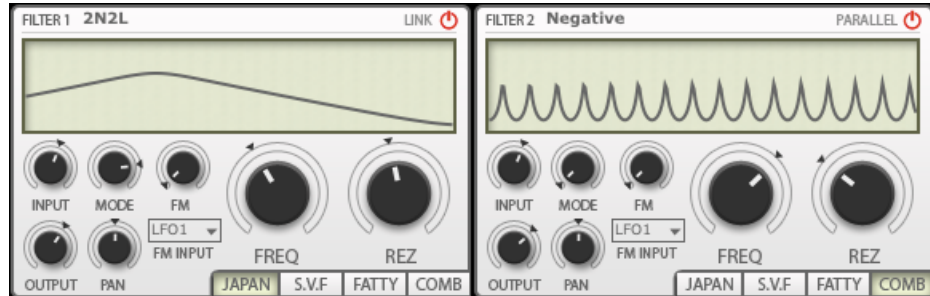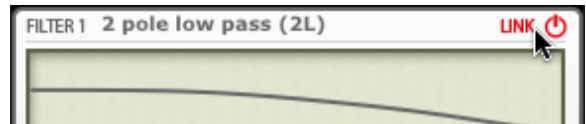

Power

The **Power** buttons for Filter1 and Filter2 allow you to activate or bypass each filter.

Link button (Filter1 only)

With the **Link** button selected, adjusting or modulating the **Freq** control for Filter1 results in the same changes being applied to Filter2.

When the Link function is active, any offset between the setting of Filter1 and Filter2 is preserved whenever possible. Any offset can be temporarily lost by moving the filter frequency to the extreme minimum/maximum positions, although it returns when moving the filter back into the main range.

Serial/Parallel switch (Filter2 only)

This switch allows you to toggle the routing of Filter1 and Filter2. In **Serial** mode, Filter1 is placed before Filter2 in the signal path. In **Parallel** mode, the 2 filters operate on the same input signal in parallel, with the output being subsequently mixed after the filtering stages.

Freq

The **Freq** control sets the cutoff frequency of the filter. MIDI notes on channels 3 and 4 are hard-wired to the Filter1 and Filter2 cutoff frequencies respectively.

Rez

This control sets the amount of resonance, or emphasis around the cutoff frequency. Higher **Rez** settings lead to filter self-oscillation effects.

Type

Etch features 4 different filter models, allowing you to apply a wide variety of colour and timbre.

Japan

This filter offers a classic Japanese monosynth filter based on cascaded OTA filters. When the Japan filter is selected, a large variety of filter **Mode** settings are available. As well as conventional 2-pole and 4-pole low-pass, band-pass, high-pass and notch filters, it also offers a 2-pole peak filter response and a number of additional combinations of low-pass, high-pass, notch and peak filter outputs which provide a huge range of possible sonic effects.

SVF

This filter is a typical state-variable filter (SVF) design, offering 2-pole and 4-pole low-pass, band-pass, high-pass, notch and peak filter responses using the **Mode** control.

Fatty

The Fatty filter is an OTA-based Sallen-Key filter design, offering low-pass, band-pass, high-pass and notch **Mode** settings.

Comb

The Comb filter is great for all sorts of uses, especially lush detune and chorus textures, resonant special FX and sounds reminiscent of flanging and phasing.

When the Comb is selected, 2 **Mode** settings are available: negative and positive.

Mode

Each filter **Type** offers a number of different **Mode** settings. The number and nature of the modes available depend on the current filter **Type**. While this control can be modulated, please note that you may experience clicks when doing so, although this can be useful for certain effects.

FM

The **FM** control sets the amount of audio-rate filter cutoff frequency modulation applied from the selected **FM Input** source. The FM function can operate at audio rates, even using the built-in LFOs which can reach 1024 Hz. You can also use the audio source or the secondary side-chain signal as an FM source (dependent on your host plugin implementation). The FM source is selected using the **FM Input** control.

FM Input

This drop-down menu allows you to select the modulation source for the **FM** function.
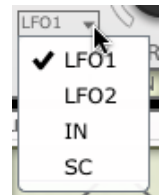
Input

This control sets the level of the audio entering the filter. Audio at higher levels drive the filter harder internally, leading to more saturation and a grittier timbre. Dial this control back in order to achieve warmer sounds.

Output

This control sets the level of the audio leaving the filter, useful for attenuating or boosting the signal after filtering.

Pan

Each filter can be panned anywhere within the stereo field. This control can be modulated by an LFO for auto-panning effects.

2.3   Compressor and Output

Compressor

The Compressor module offers a simple single-control compressor, switchable between a hard and soft knee response.

The Compressor module's Visualizer represents the output level vs. the input level.

Compress

The **Compress** control sets the amount of compression applied to the signal. At the minimum setting, no compression is applied and the signal passes through to the Output module without being processed.
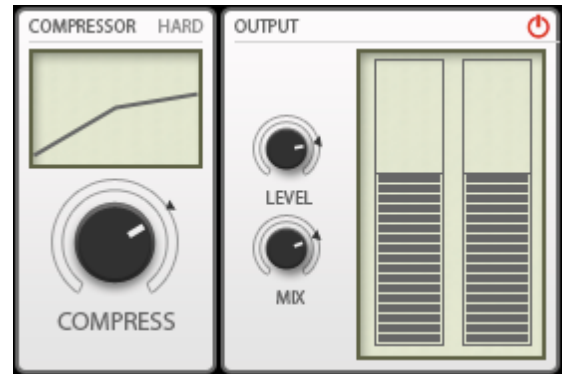
Soft/Hard knee switch

This switch toggles the compressor between **Soft** and **Hard** knee modes.

Output

The Output module's Visualizer is a VU meter representing the current level of Etch's output signal.

Power

The **Power** button on the Output module effectively offers a bypass function - it activates or bypasses the effect of Etch on the incoming signal. With the **Power** button deactivated, the input signal passes to the output without being affected.
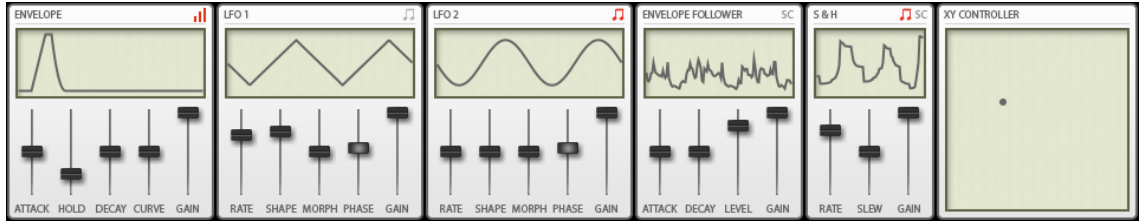
Level

The **Level** control sets the final level of the audio leaving Etch, useful for any final attenuation or boosting of the signal.

Mix

The **Mix** control sets the balance between the original input signal (towards the left of the control) and the processed signal (towards the right of the control).

3   Etch internal modulators

Almost all modulation in Etch relies on the <u>TransMod modulation system</u>. The exception is the **FM** function on each filter which allows you to modulate the filter cutoff frequency at audio-rates using LFO1, LFO2 or the audio inputs as a modulation source.

All modulation signals in the TransMod system are quantized to control rates.

Sync buttons

The LFOs and S+H modules' clocks are synchronized to the host tempo by default.

Click the **Sync** buttons to enable or disable the host tempo sync function for each module.

Side-chain (SC) buttons

The Envelope Follower and S+H modules feature the ability to operate on the secondary side-chain input (inputs 3-4) of the Etch plugin. Enable the **SC** button on each module in order to operate on the side-chain signal. The side-chain input is *host-dependent*.
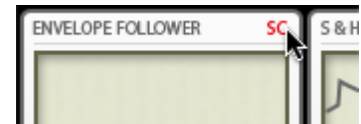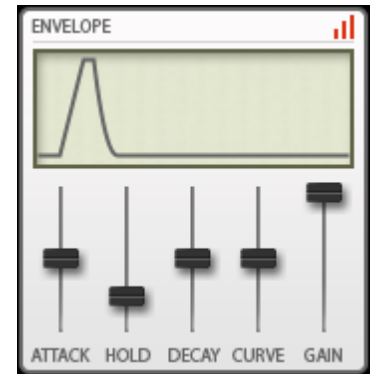
3.1   Envelope

The Envelope module is triggered via MIDI to generate an AHD envelope for modulating Etch's parameters via the TransMod modulation system.

It is dependent on triggering via Etch's MIDI input in order to function, and responds to the following:

- MIDI note C#-2 (MIDI note 1) on MIDI channel 1
- MIDI notes on MIDI channels 3 and 4

The Envelope can be used to modulate the Output **Level** so that audio only passes through while the envelope is active, useful for triggered envelope filtering effects. Alternatively, try modulating the filters' **Freq** control, especially with the Velocity button enabled.

The Envelope module's Visualizer represents the current envelope shape.

Velocity button

This button toggles whether the Envelope module responds to MIDI note-on velocity. With the button activated, incoming velocity dictates the level of the envelope output.
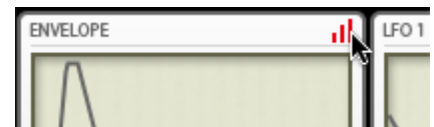
Attack

The **Attack** is the time taken for the envelope to rise from 0 to a value of 1.

Hold

The envelope is held at a value of 1 for the duration of the **Hold** time.

Decay

The **Decay** is the time taken for the envelope to return to 0.

Curve (Decay Curve)

The **Curve** setting controls the shape of the **Decay** stage. At low settings it has a linear decay behaviour, while at high settings, the curve is exponential.

Gain

The **Gain** control offers a final attenuation control for the output of the module before it enters the TransMod modulation system. At 100%, no attenuation is applied to the output modulation signal.

This control is intended to be modulated by other TransMod sources, in a similar way to using a VCA to scale one modulation source with another in an analogue modular system.

3.2   LFO1 and LFO2

Etch's LFOs can operate at audio rates, reaching speeds of 1024 Hz. These speeds are intended to be used with the dedicated filter FM function on each filter module - use the **FM Input** drop-down menu to select LFO1 or LFO2, and use the **FM** control to set the amount of modulation.

The TransMod modulation from the LFOs is always quantized to control rates.

The LFO modules' Visualizers represent the current LFO shape.
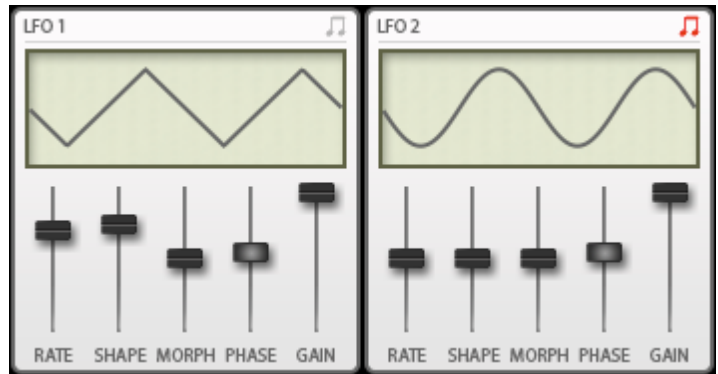
Sync button

With the **Sync** button enabled, the **Rate** control is set in BPM values derived from the tempo of the host within which Etch is running.

With the **Sync** button disabled, the **Rate** control is set in Hz.

Rate

The **Rate** control dictates the speed of the LFO's oscillation. Etch also features a way of using MIDI notes to switch between sync'd LFO rates on the fly, even with the **Sync** button disabled.

Shape

The **Shape** control morphs the shape of the LFO continuously through various waveform shapes.

At the default setting of 50%, the LFO shape is a sine wave.

LFO Shape 0%   **LFO Shape 25%**   **LFO Shape 50%**   **LFO Shape 75%**   **LFO Shape 100%**
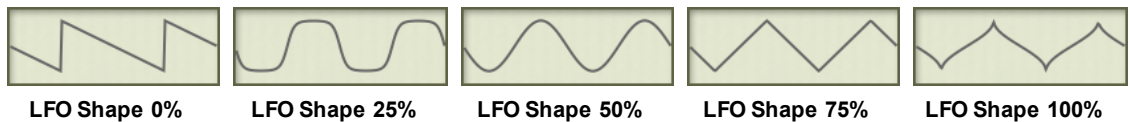
Morph

The **Morph** control shifts the centre point of the waveform without altering the wavelength. It is similar to a pulse width control in that it varies the duty cycle of the waveform.

Phase

The **Phase** control allows you to adjust the phase of the LFO within 360 degrees.

Note: This control cannot be modulated with the TransMod system.

Gain

The **Gain** control offers a final attenuation control for the output of the module before it enters the TransMod modulation system. At 100%, no attenuation is applied to the output modulation signal.

This control is intended to be modulated by other TransMod sources, in a similar way to using a VCA to scale one modulation source with another in an analogue modular system.

MIDI note functions

Etch's LFOs respond to incoming MIDI notes on channel 1 for resetting to the start phase and for setting various sync'd delay times. These functions are summarized in the Using Etch section.

3.3   Envelope Follower

An envelope follower produces a modulation signal by reacting to the amplitude of an audio input signal. Etch's Envelope Follower module can be driven by the audio input signal or the secondary side-chain input, which allows you to use a signal from a suitable audio source elsewhere in your host in order to produce modulation signals.

The Envelope Follower module's Visualizer represents the real-time output of the module.

Side-chain (SC) button

The **SC** button toggles whether the audio input or the side-chain input are used as the audio source for driving the Envelope Follower module. Enable the button to operate on the side-chain signal instead of the input signal. The side-chain input is *host-dependent*.
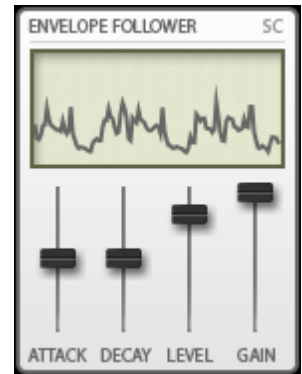
Attack

This control sets the **Attack** time of the envelope generated in response to a new detected transient.

Decay

This control sets the **Decay** time of the generated envelope.

Level

The **Level** control allows you to attenuate the level of the signal entering the envelope follower transient detection circuit. At 100%, no attenuation is applied on the signal.

Gain

The **Gain** control offers a final attenuation control for the output of the module before it enters the TransMod modulation system. At 100%, no attenuation is applied to the output modulation signal.

This control is intended to be modulated by other TransMod sources, in a similar way to using a VCA to scale one modulation source with another in an analogue modular system.

3.4   Sample+Hold (S+H)

A Sample and Hold (S+H) function is designed to output a stream of varied modulation values - typically random values derived from a dedicated noise signal to produce a 'random LFO'.

The S+H module's Visualizer represents the real-time output of the module.

Sync button

With the **Sync** button enabled, the **Rate** control is set in BPM values derived from the tempo of the host within which Etch is running.

With the **Sync** button disabled, the **Rate** control is set in Hz.

Side-chain (SC) button

With the **SC** button enabled, the S+H module operates on the secondary side-chain input. With it disabled, it operates on the internal noise source, in classic S+H fashion. The side-chain input is *host-dependent*.
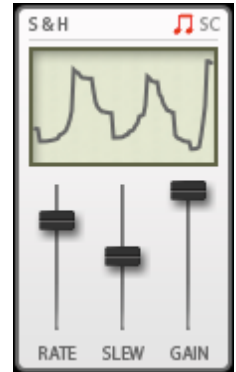
Rate

The S+H function is driven internally by a series of pulses called a clock, the speed of which is dictated by the **Rate** control. When a clock pulse occurs, the dedicated internal noise signal is 'sampled' - its current value is 'snapshotted' - and held constant at the sampled value until the next clock pulse, when the process repeats.

Slew

The **Slew** control introduces lag between each sampled and held value, resulting in a smoother transition between values instead of abrupt changes with the control at the minimum setting.

Gain

The **Gain** control offers a final attenuation control for the output of the module before it enters the TransMod modulation system. At 100%, no attenuation is applied to the output modulation signal.

This control is intended to be modulated by other TransMod sources, in a similar way to using a VCA to scale one modulation source with another in an analogue modular system.

3.5   XY Controller

The XY Controller provides an easy interface for controlling 2 control axes with the mouse. Like other modulation sources in Etch, each axis can be assigned via the <u>TransMod system</u> to any number of Etch parameters with differing depths, so that radical timbral shifts are possible with simple user input.

To manipulate the XY Controller, simply click and drag within it with the mouse. The current value, which is indicated by the small circular marker, jumps to the click point and follows it while it is dragged without releasing the mouse button.

It is possible to map the XY Controller to a real X-Y touch pad or joystick, or simply to 2 separate single-axis MIDI controllers, using Etch's <u>MIDI Learn</u> function.

Note: The XY Controller cannot be modulated via the TransMod system.
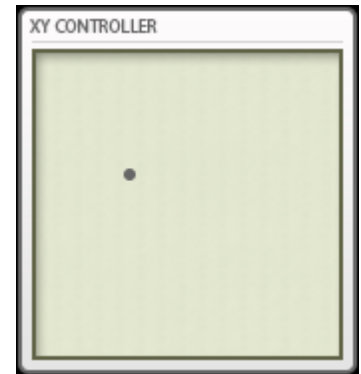
4 Using TransMod modulation in Etch

Using TransMod modulation

The TransMod modulation system allows you to route a single modulation source to multiple synthesis and effect parameters, each with its own definable depth.

Modulation depths are represented visually on the parameter itself, rather than in an abstract list of assignments.

TransMod modulation occurs at control rates, in 32-sample blocks. Etch also features a dedicated filter FM function which is independent of the TransMod system - this function can operate at audio rates, either using the internal LFOs or an external audio source.

There are 2 types of 'views' of the synthesis parameters:

Initial Source view (Source)

To activate this view, click the **Source** button (this button is activated by default).

In this view, no modulation depths can be viewed or created. You simply set the initial value of any parameters before any modulation occurs.

TransMod modulation source views

To the right of the Source button are a number of buttons which represent the various TransMod modulation sources that are available.

Clicking any of these buttons means that you can view and create modulation depths from the TransMod source to Etch's parameters. Modulation depths can be seen and set visually on parameters, with indicators showing the current state of the control.

The modulation depth that is set represents the maximum amount of modulation possible from the TransMod source. The changing intensity of the TransMod source, and the combined effect of any other TransMod sources which have been routed to the parameter, dictate the actual modulation that occurs at any one time.

Only one TransMod source 'view' is visible at any one time.

In the following example, **LFO1** is modulating the **Freq** parameter in Filter1.

The extent of the modulation depth shown represents the maximum amount of possible modulation from the Source value - in this example, when the LFO has reached its maximum point.
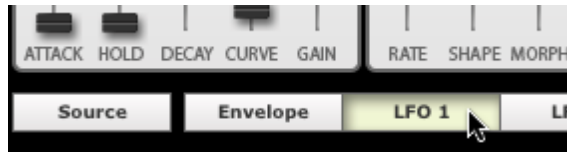

With the Source button selected, no modulation is shown. Note the real-time indicator showing the current value of Filter1's Freq control.

With the LFO1 TransMod source selected, the destination modulation amount is shown around Filter1's Freq control.

Adjusting modulation depths

To adjust the modulation depth of a control:

First make sure that the desired TransMod source is selected.
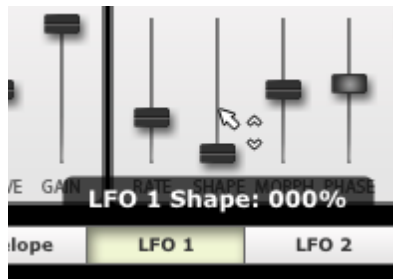
For rotary controls:

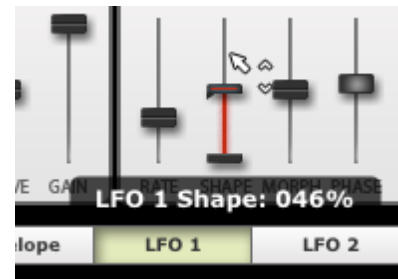**Mouse over the outer ring of the control - notice the cursor has changed.**

Click and drag up/down on the outer edge of the control to set the modulation amount.

For slider controls:

Mouse over the slider path rather than the slider cap - note that the cursor has changed.

Click and drag up/down on the slider path to set the modulation amount.

Controls that cannot be modulated

Most of Etch's parameters can be modulated, although there are some exceptions:

- **Phase** control in voice LFOs
- All buttons and switches
- the XY Controller, which is intended as a live input module

Real-time modulation indicators

Any modulation that occurs causes a control's actual value after modulation to be shown on controls in real time.

4.1   Further TransMod operations

Setting a TransMod source to uni-polar or bi-polar operation

By default, all TransMod modulation sources act as uni-polar sources. In other words, the modulation occurs only in one direction - from the initial Source value towards the maximum modulation value. The modulation depth can be positive (increases the parameter's value) or negative (decreases the value), but not both.

You can also set each source to act in a bi-polar way, so that the modulation occurs in both directions from the initial Source value.

In the following example, LFO1 is shown first as a uni-polar source, modulating Filter1's **Freq** control.

By right-clicking on the LFO1 TransMod button, it is then set to bi-polar mode by clicking on **Bi-polar modulator** in the TransMod source context menu that appears. The modulation then occurs in both directions, as shown by the indicator that moves to show the current value of the parameter after being modulated.
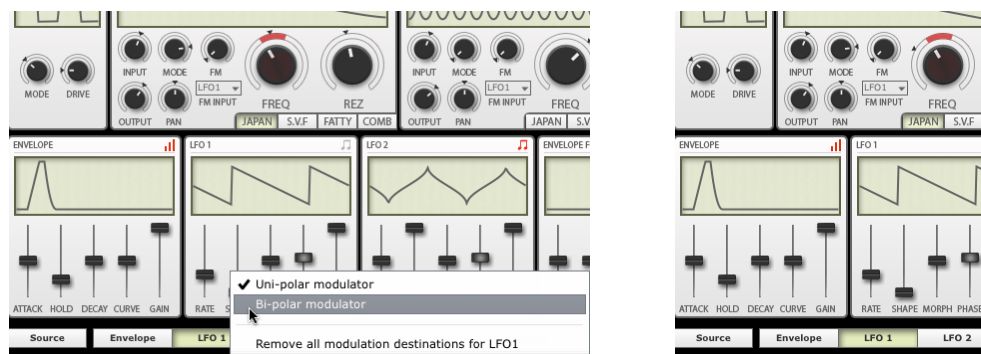
Right-click on the TransMod button and click on 'Bi-polar modulator'

Note the real-time indicator showing the current value as a result of switching to bi-polar mode

To return a modulation source to uni-polar operation, use the **Uni-polar modulator** function on the TransMod source context menu.

Managing TransMod modulation

Displaying which TransMod sources are modulating an Etch parameter

To see which TransMod modulation sources are modulating an Etch parameter, move the mouse over the parameter. Any TransMod sources which contain destination modulation depths on the parameter flash on the interface.

Control context menu

Right-click on an Etch parameter to display its context menu, which contains several functions relating to managing TransMod modulation.
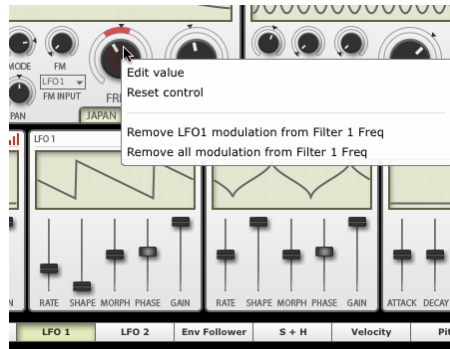

Remove modulation from control

Click this function to remove the modulation depth on this control for the currently selected TransMod source.

Remove all modulation from control

Click this function to remove the modulation depths on this control for all TransMod sources that contain modulation depths on it.

TransMod source context menu

Right-click on any TransMod modulation source button to display its context menu. The Uni-polar modulator and Bi-polar modulator functions have been previously discussed.
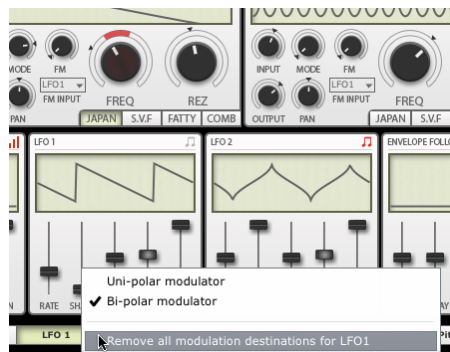
Remove all modulation destinations

Click this function to remove destination modulation depths for all parameters modulated by this TransMod source.

Adjusting modulation depths with MIDI CCs or host automation

Etch's MIDI Learn system makes it possible to assign controls and controls' TransMod modulation depths to MIDI continuous controllers (CCs). This is useful for changing the amount of modulation over time for a specific parameter. This is usually only possible for filter FM from the LFOs using the **FM** controls in Filter1 and Filter2.

Note: it is also possible to modulate the **Gain** controls for each modulation block to vary the intensity of each of these TransMod sources over time - this varies the intensity of the entire modulation source, which affects all destination parameters being modulated by the source.

4.2   TransMod modulation sources

Source	Envelope	LFO 1	LFO 2	Env Follower	S + H	Velocity	Pitch	Noise	Rand	XY X	XY Y

Envelope

The Envelope source provides the output from the Envelope module.

It is only possible to use the Envelope source when sending MIDI notes to Etch.

LFO1 and LFO2

These sources provide the output from LFO1 and LFO2.

Note: It is also possible to modulate the filter cutoff directly using either LFO, using the FM and FM Input controls in each filter module - this dedicated routing allows audio-rate modulation. All LFO modulation via the TransMod system is quantized to control rates.

Env Follower

The Env Follower source provides the output from the Envelope Follower module.

S+H

The S+H source provides the output from the S+H module.

Velocity

The Velocity source provides a source generated at every MIDI note-on derived from the note's MIDI velocity.

It is only possible to use the Velocity source when sending MIDI notes to Etch.

Pitch

The Pitch source provides a keyboard tracking modulation source generated from MIDI notes received on channels 2-16 of Etch's MIDI input.

You can assign this source to a filter's **Freq** control in order to track the filter timbre with MIDI note input - you can, for example, send a sequence of MIDI notes to a monosynth, route the audio output of the monosynth into Etch, and use the same MIDI notes to track Etch's filters.

It is only possible to use the Pitch source when sending MIDI notes to Etch.

Noise

The Noise source provides a white noise source, quantized to control rate. It provides an constantly changing random source.

Rand

The Rand source provides a random value generator for every MIDI note received at Etch's MIDI input, on any MIDI channel.

It is only possible to use this source when sending MIDI notes to Etch.

XY X

This modulation source provides the value of the X-axis of Etch's XY Controller.

XY Y

This modulation source provides the value of the Y-axis of Etch's XY Controller.

5   MIDI Learn mode

Etch's MIDI Learn mode allows you to map MIDI CCs (continuous controllers) to Etch parameters, and to parameter modulation depths from TransMod sources. Sending MIDI to Etch is *host-dependent*.

MIDI Learn CC setups are saved with the host project containing Etch. They are not saved within individual Etch presets (saved using Etch's Preset picker).

Mapping a MIDI CC to a control
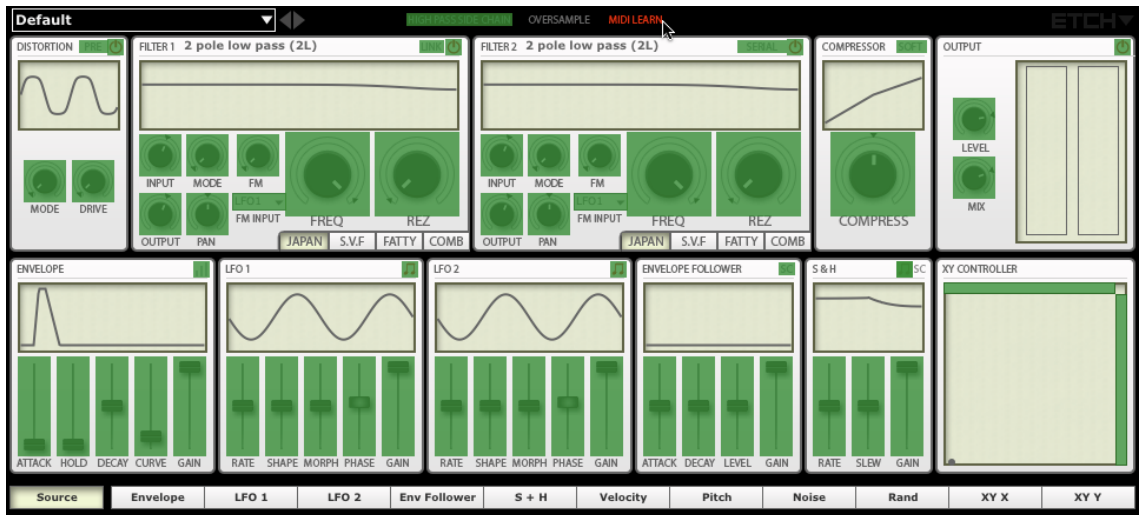
1. Click the MIDI Learn button to enter Learn mode. Parameters in Etch which can be mapped to MIDI CCs are highlighted in green. Note that no TransMod modulation source is currently selected.
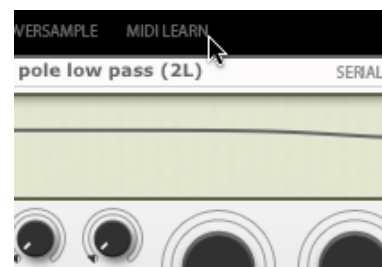

2. Click the parameter you want to map on the Etch interface.

3. Move the physical MIDI CC knob, slider or other controller you want to use.
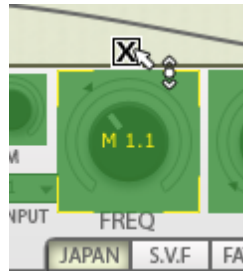

4. The parameter is now mapped. The MIDI channel and CC number are overlaid on the control.

5. Click the MIDI Learn button again to exit Learn mode.

Removing a MIDI Learn assignment

1. While in MIDI Learn mode, click the 'X' button above each assigned control.


2. The assignment is now removed.

Mapping a MIDI CC to a control's modulation depth for a TransMod source

It is possible to assign individual controls' TransMod modulation depths to MIDI CCs.

This is useful for changing the amount of modulation over time for a specific parameter, and is usually only possible for filter FM from the LFOs using the **FM** controls in Filter1/Filter2.

1. Click the desired TransMod modulation source button.
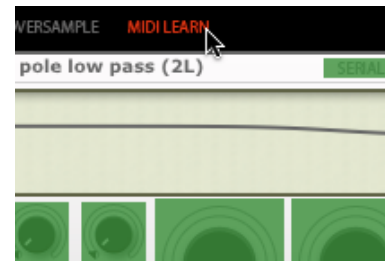
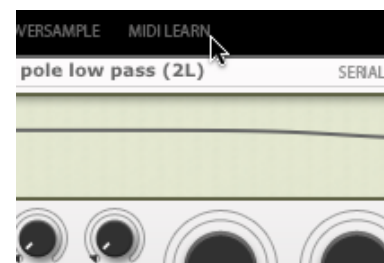2. Click the MIDI Learn button to enter MIDI Learn mode.

3. Click the parameter you want to map on the Etch interface.

4. Move the physical MIDI CC knob, slider or other controller you want to use.

5. The parameter's modulation depth for the current TransMod source is now mapped. The MIDI channel and CC number are overlaid on the control.

6. Click the MIDI Learn button to exit MIDI Learn mode.