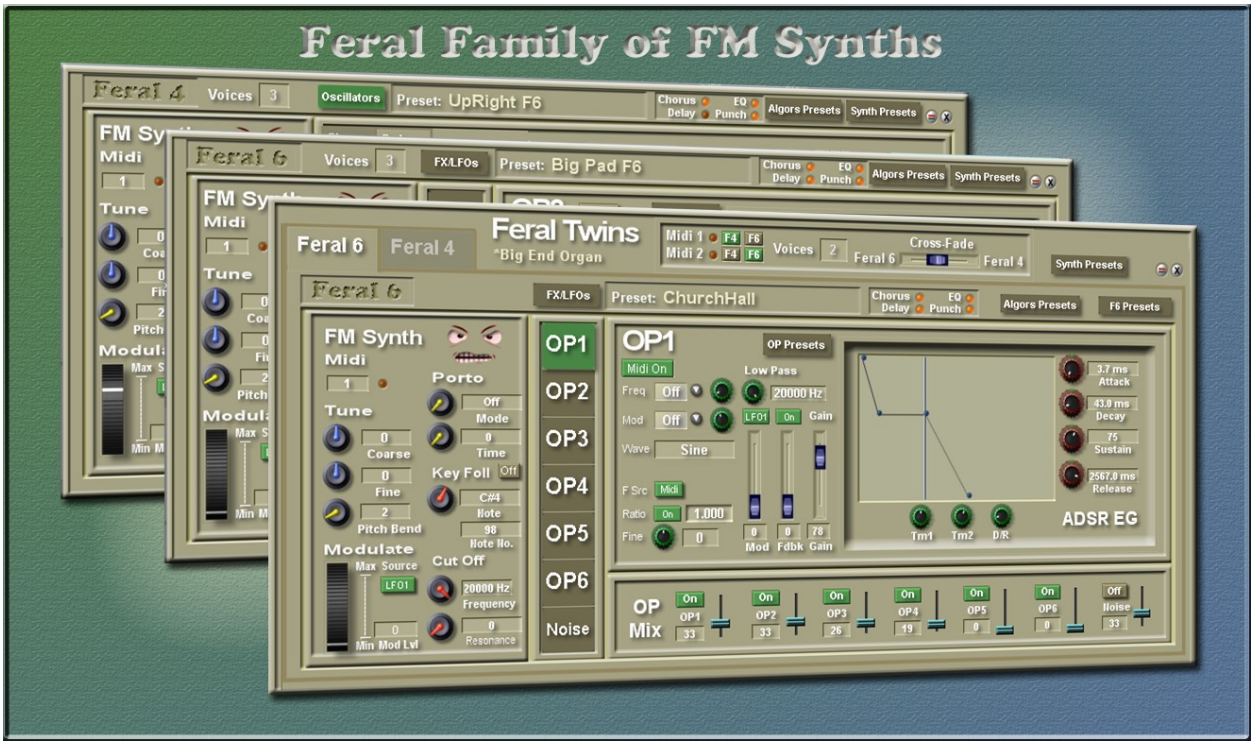
Feral Family of FM Synths



FM Synths built for use within the S|C Sonic Core® Scope XITE and/or PCI environments.

The Feral Family primarily consists of two FM synths of identical design, one with 6 operators and the other with 4 operators. The synths may be used independently or together within the 'Feral Twins' configuration.

Operators

The 'Ferals' were designed along the classic FM synthesis lines, where operators may be chained, layered and/or modulated to build harmonic rich sounds.

There are numerous posts regarding FM synthesis online and a number of tutorials on how to create various sounds by setting up various operator 'Algorithms' to achieve a desired outcome. The Ferals may not give you the same sound when you follow a tutorial, but it will give an insight into how sounds are crafted.

The designs utilize multi-mode oscillators (within each operator) capable of generating sine, triangle, saw up/saw down and square waves.

Each operator is fed by midi note signals and (if selected) the output from another operator. Each operator can also be modulated from another operator, feedback and/or an LFO.

The Midi in can be switched off if required and it is also possible to set a fixed frequency (regardless of which midi note is sent to the synth). This is likely best used in support of percussive or sound effects generations.

In keeping with classic FM Synth design input note frequencies can be divided based on a set of ratios. This allows up and down octave changes for individual operators. The 'Fine' frequency adjustment provides a level of up or down detuning.

Input Frequency Ratios		
Selected Ratio	**Note Change**	**Octave Change**
0.062	-48	-4
0.125	-36	-3
0.250	-24	-2
0.500	-12	-1
1.000	0	0
2.000	+12	+1
4.000	+24	+2
8.000	+36	+3
16.000	+48	+4

Note: You can switch off the Ratio and Fine settings (useful for assessing the effect such settings have on the overall synth sound)

Operators (F6 - 2 to 6 and F4 - 2 to 4) can be synced to operator 1 (doing this tends to override the ratio settings and may not give the desired effect).

Adding a second operator as an input or modulation source can result in some very harsh sounds. A low Pass filtered is provided to take out some or all high-end frequencies should that be needed to tame the sound.

Finally, each operator comes with its own ADSR Envelope generator to shape its output sound.
A 'Noise' oscillator is also included, and white/pink or band-pass noise may be introduced to the synth's output sound.

An 'Operator Mix' section is included so the outputs of each operator may be switched in and level adjusted when producing the final synth output sound.

Notes:

1. Switching off an operator in the 'Op Mix' section does <u>not</u> stop it from be utilized as an input or modulation source for another operator.
2. Similarly, reducing an operator's 'gain' to zero does not affect its use as an input or modulation source for other operators.

Presets

The Ferals have shared presets, including:

- Synth;
- Algors;
- OP;
- LFO;
- Chorus;
- Delay; and
- Amp.

You may get a warning when loading synths into a project that presets are not fully compatible. This is because Feral 4 and Feral 6 synths have a different number of operators and Scope sees them as not fully compatible. You can dismiss these warning and all should work as expected.

Notes:

1. A sound generated in Feral 6 utilising Ops 5 and 6 may sound different when loaded to Feral 4. You may wish to adjust the sound in Feral 4 and save it as a more compatible preset.
2. In general, Synth Presets have been labelled with F6 or F4 in its title to alert you to their origins.

When developing a new sound it may be useful to load 'Algor1' presets. This preset should set the operators back to a basic sine wave configuration.

From here:

- switch off all Ops in the OP Mix section except the one (or more) you are working on;
- Switch on and tweak the Feedback fader to see if you can get a suitable sound for the current OP (you might pair back the LP to get a better sound);
- Try selecting (and adjusting the level of) another OP as a 'Freq' input and/or 'Mod' source;
- Try switching off Midi In if a another OP is fed to the source or mod of the current OP;
- Check what effect switching the Sync On has to the overall sound
- Set the ratio up or down (and add detuning as required) to provide extra harmonics;
- Adjust the ADSR EG to give the required envelope (note how the sustain can affect the overall timbre of the sound). Adjust the times (TM1/2) and decay (D/R) as required. ADSR setting may be quite different for different Ops depending on its use (e.g. Short slap attack, slow bowing type attack, long release, etc.);
- Switch other Ops in as required and adjust each output to suit the overall synth sound.

LFOs

The Ferals include two identical LFOs.

Each can be selected to modulate one or more of the operators or the noise oscillator.

Using the Modulation Wheel, the overall sound can also be modulated with one of the LFOs.

Note: Modulation possibilities are fairly limited to minimize design complexity.

Feral 6 Operator View

Feral 6 FX/LFO View

Effects

The Ferals are equipped with chorus, delay, punch and EQ effects.

These may set up on the FX/LFO page and switched in or out as required. In general, I tend to set them to off when developing a new sound and then bring them in as final ‘polish’ at the end.

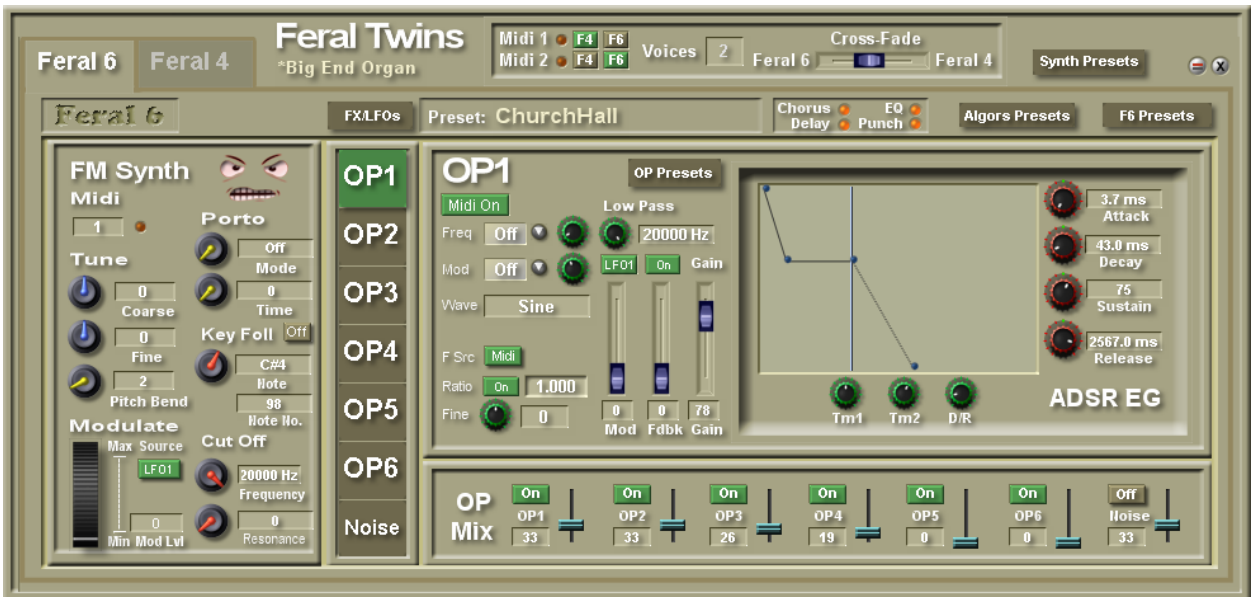
The LEDs in the header of each synth indicate whether each FX is on or off when working on the Oscillator page. You can switch each on or off by clicking on each LED if required.

The ADSR EG in the Amp section manages the envelope shape of the final sound. When setting a new sound you may wish to ensure this envelope is opened up enough to hear the effect of each ADSR EG within each OP, before returning here to finely adjust settings of the final sound.

Feral Twins

The idea for the ‘Feral Twins’ came about when I was testing the two synths side by side and I liked the layering effect that could be achieved by having two separate synths working together.

The Twins consists of complete Feral 6 and Feral 4 synths being built into a single module.



You can load each synth with any of the presets established in either stand-alone device. Similarly, you can develop new sound in a Feral 6 or 4 synth within the Twins and save it for use in the stand-alone devices.

The Feral Twins have two Midi inputs. This allows for midi inputs from two midi sources, each with its own midi channel. It is possible to use each Feral completely independent of the other or feed both synths from one (or both) midi source. There is a cross-fade fader to set the desired mix or you can utilize the separate stereo outs to mix externally.