



MIXMODE expander

Control and function reference guide

Thank you for purchasing the Steady State Fate MIXMODE Expander.

This expansion to the MIXMODE provides direct control over the positive and negative saturation threshold levels. This is accomplished by use of the panel mounted potentiometers or via externally patched control voltage signals.

Additionally, the expander provides two dedicated mixer outputs. This allows the channel 4 output on MIXMODE to be free of mixer output duty and to be a full time attenuator output. Both 1/8" (3.5mm) and 1/4" jack outputs are provided for the mix. The 1/4" out can be used to patch the mix to an outboard mixer or to 5U modular systems without the need for an adapter or special cables or mults.

Enjoy!

1ab SATURATION CONTROLS

These are the controls for setting the clipping threshold level for the saturator. They are labeled (+) and (-) to denote the respective positive and negative half of the waveform. The controls are labeled 4V and 10V at the extremes. The actual clipping level may vary slightly depending on the amplitude of your signal. But those values are relatively accurate and don't really matter as the precision is not needed. Set and forget or wiggle away to dial in your harmonic content.

2ab SATURATION CONTROL SELECTION SWITCHES

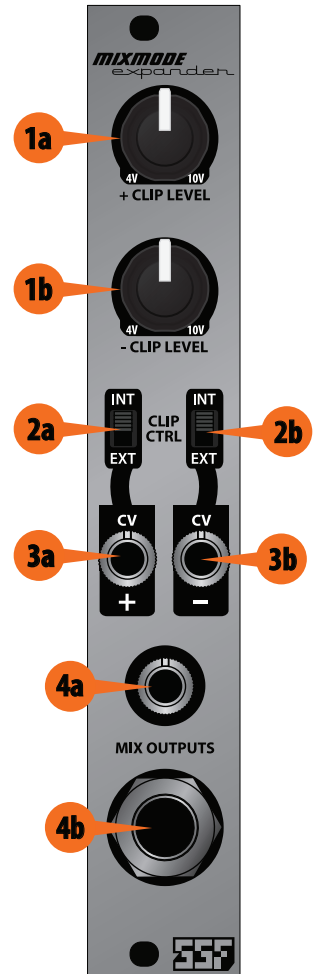
Use these switches to select internal (INT) i.e. panel control or external (EXT) i.e. CV control of the saturation levels. When switched in position, the other option is completely disconnected. This way you can leave a CV patched and switch back and forth from manual to voltage control on the fly. Each polarity has a dedicated switch.

3ab SATURATER CV INPUTS

These two jacks are for patching control voltages to modulate the saturation threshold levels. There is one CV input for each polarity of the saturator. Both inputs accept any and all control voltages. That being so, levels beyond what the normal saturation controls are capable of producing are possible when using external voltages. For normal effects, use positive voltages from +10V down to 0V for the (+) input and negative voltages from -10V up to 0V for the (-) input. Going beyond those levels is perfectly fine but the behavior will change as the entire signal will compress and exhibit some slight offset. In many cases these effects are useful but keep this in mind when choosing CV sources and combinations of CV.

4ab MIXER OUTPUTS

These are the dedicated mixer outputs of the four MIXMODE inputs. Jumper selection of channel output jack behavior still applies when using these outputs. By utilizing these jacks, output 4 on MIXMODE does not need to be used as the mixer output. Therefore output 4 can be used full time as channel 4's attenuator output. In addition to the standard 1/8" output, a 1/4" output is available simultaneously for patching directly out of your modular system into a mixing desk or for patching to 1/4" 5U modular systems.



VOLTAGE CONTROLLED SATURATION

If you have read the MIXMODE manual, then you already know the benefits of saturation circuitry as an additive synthesis technique. And you are now at least somewhat familiar with how MIXMODE's saturator behaves. The ability to voltage control the symmetry and saturation threshold of your signal is simply just amazing. There are a few things you should know about the VC saturation of MIXMODE that will help you to understand this new modulate-able parameter. First off, using the proper signal polarity for each CV input is useful but not necessary so rest easy if you are using an already bipolar control voltage such as an LFO or VCO. To mimic the response of the panel controls, limit CV from 0 to +10V for the (+) input and -10V to 0 for the (-) input. Beyond this range is perfectly safe and will produce additional effects beyond clipping. For instance, referring to the (+) CV input; when the control signal ventures into the negative region, the signal will begin to 'push' itself into the negative portion of the waveform and compress both sides of the signal. This in effect looks like the negative half is distorting in a unique and interesting way. Additionally, the signal appears to have some offset in the negative direction as the CV approaches -10V. See the graph on page 2 of the MIXMODE manual. This will produce some useful effects at slow speeds and very interesting wave shaping occurs at audio rates.

Audio rate modulation of the saturator can be very powerful. Audio rate amplitude modulation will produce ring modulated tones. Examples of this can be heard using a VCA modulated by a VCO. This is a familiar sound. But have you ever heard audio rate modulation of saturation? Indeed not many modules could produce such an effect and the result is very inspiring. This technique will produce many tones and opens the door to yet more unexplored territory for experimentation. Really amazing waveform animation and dynamic wave shaping are possible with high speed control voltages.

One last thing worth mentioning about the CV behavior is the response to rapidly changing CV sources. Some users may prefer smooth saturation changes, so using sine, triangle and envelopes will ensure that response. This will not be the case when using square, saw or other abruptly changing sources to modulate the saturator.

Remember that we are setting a clipping level that is cutting into the signal, so abrupt changes to that level will produce hard edges at high speeds. This equates to clicks and pops. This is not a bad thing unless you intend to achieve only smooth saturation transitions. Of course there are no rules here and you are encouraged to experiment and try new things!

SUGGESTIONS

Some things to try out that you may not have thought of...

We understand the effect of the saturator on audio but what about using it for control voltages?

You can modulate the saturator to wave shape your control voltages in unique ways.

Try mixing up to four CVs and then modulate or manually control the saturation level.

Try using saturated audio or CV to modulate VCOs and VCFs.

Experiment with feedback. Use voltage controllable audio and/or CV sources and feedback the mix output to modulate those sources.

Modulate the saturation thresholds with some of the sources in varying amounts.

Use MIXMODE to convert gates and triggers into notes by attenuating/inverting and controlling the 1V/oct input on VCOs. Paired with Propagate turns it into a melody maker.

Hard clip dynamic signals with the PTG or GND CTRL before entering MIXMODE's saturator. This expands the harmonic palette even further.

Use MIXMODE's saturator like a crude compressor or limiter.

Experiment and most importantly, have fun! <3 SSF

TECH SPECS	
Width.....	4hp
Depth, Max.....	27mm
Current Draw	
Quiescent.....	+0mA