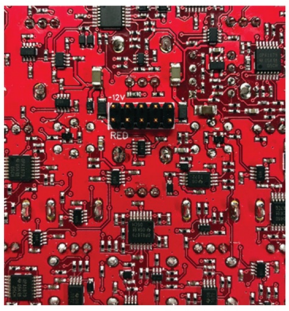


BII TRIPTYCH User Manual

BII Electronics x SSF: TRIPTYCH

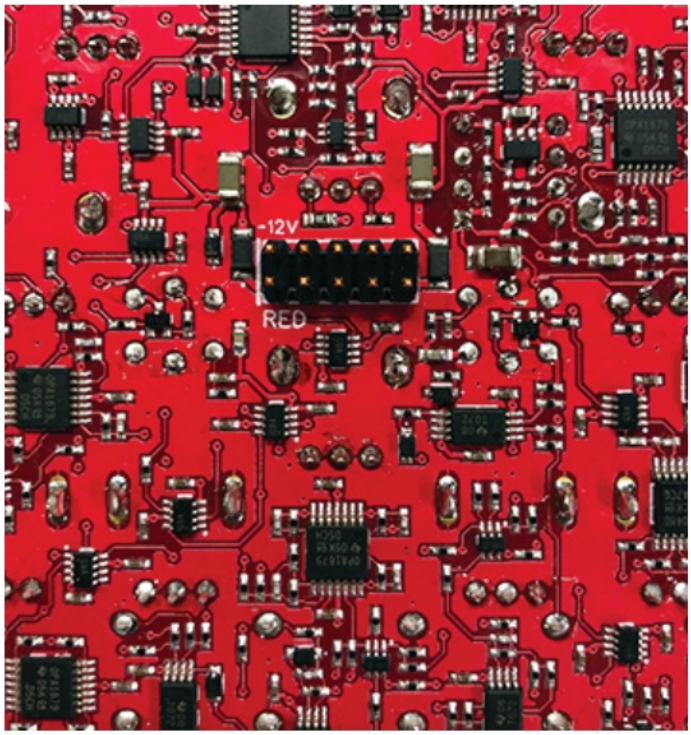
Introducing BII Electronics, a new maker of modular tools for music creation and sound destruction.
Founded by musicians and friends Boys Noize and Baseck, BII is driven by a shared obsession with Eurorack-based processes, bringing ideas to reality through collaboration with the world's best specialist hardware manufacturers.
Two artists, with combined decades of sound design, music production, and live performance experience, joined by one innovator in engineering and manufacturing. This team of three's collective inspiration and individual insights are embodied in the form and function of every BII instrument. With this partnership in mind, it is fitting that BII's inaugural module carries the name "TRIPTYCH."
TRIPTYCH was imagined through hands-on practice — the discovery of a unique chain of three devices generating sounds of incomparable timbral character, and an affinity for compact modules with an all-analog signal path.
Already enthusiasts of the craftsmanship of New York-based hardware producer Steady State Fate, Boys Noize, and Baseck invited SSF designer Andrew Morelli to collaborate on BII's first module. The newly formed trio's combined knowledge and uncompromising attention to detail resulted in a bespoke, completely integrated module that surpassed expectations: Distortion (3x), Flange/Comb, and Filter, with all paths internally re-routable. TRIPTYCH was born.
Three collaborators, three effects, and endless possibilities – we look forward to hearing what you discover as you unfold BII Electronic's TRIPTYCH.

Contents

SYNOPSIS

Triptych is a multi-tiered module consisting of a trio of internally re-routable effects with the addition of input and output voltage-controlled amplifiers. From distortion to Karplus-strong and polyphonic resonance, Triptych is designed to be a unique sound shaping and transformation tool from subtle to extreme via a fully analog signal path.
The triptych was inspired by guitar pedal effect chains used by Boys Noize involving a distortion, flanger, and filter as a model. Rather than clone these effects, I set out to design my own versions that complement the signature sounds of the BII artists. Being a eurorack device, we wanted to preserve the capability to re-patch these effects in the most useful ways and hence devised a complex switching scheme to alter the signal path and dramatically increase the complexity of sound design potential. Adding the ability to voltage control just about every parameter, a multitude of dynamism and expressiveness truly unfolded beyond our expectations.
I encourage you to experiment with Triptych and find new ways to explore its many facets. Whether using it as a distortion or effect, oscillator or character filter – I hope you will find Triptych as rewarding and inspiring as we have during its development. -A.M. SSF

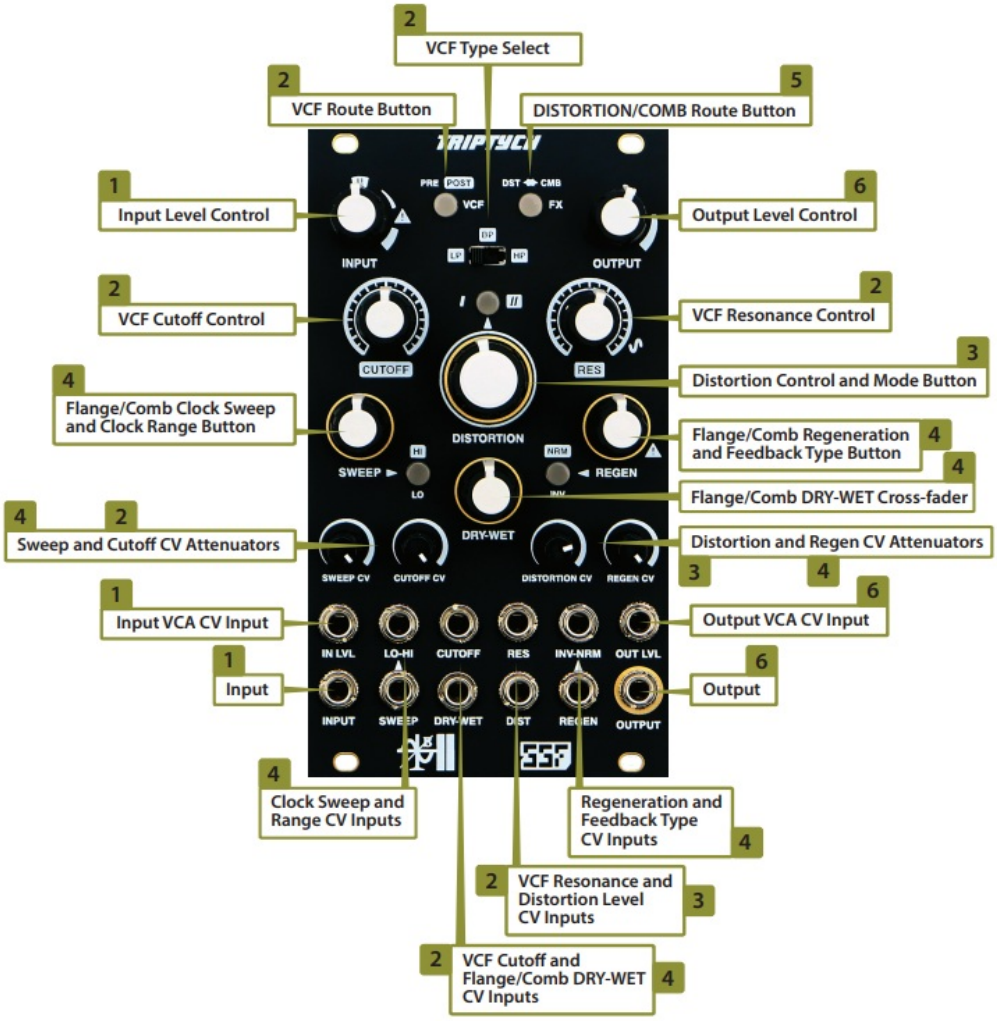
CONNECTING POWER and PRECAUTIONS



Power Consumption: +119mA, -95mA

Remove the included power supply cable and take note of the side of the cable with the **RED** stripe.
Locate the 10pin power header on Triptych and note the side marked -12V, **RED,** and connect the **RED** side of

the power cable to that side of the power header.
Triptych is reverse power protected so don't freak out if you do this wrong for some reason…
Power Consumption: +119mA, -95mA
Mount the module in your rack using the provided hardware or your own fancy bits. It is important to note that Triptych involves many high gain stages, multiple oscillating feedback paths, and a high-frequency clock. Many external modules can both emit and receive radiation from such devices. It may be necessary to find a comfy place for Triptych to minimize bleeding to or from other devices – especially digital modules. Drawing at or near the power capacity of your PSU can enhance these effects and specific situations depending on your module and power setup. This is common with any VCA or VCO but just a bit more so given the sum of Triptych's parts.



FUNCTIONS

1. **INPUT VCA**

   The **INPUT** jack, **INPUT** potentiometer, and **IN LVL CV** jack make up the Input VCA. Patch a signal into the **INPUT** to process the audio through the Triptych. Adjust the gain or attenuation via the INPUT control potentiometer. A decent amount of gain with soft saturation is available to overdrive the VCF, Distortion, and FX sections, depending on your routing configuration. The center tick marked U denotes approximate unity input gain, with a fair presence of transistor saturation applied. Furthermore, due to the additional gain staging via the distortion and output sections, the INPUT control will govern the overall depth of these subsequent stages and relevant extremities. If you seek a mild distortion effect or no input saturation, set the INPUT gain below U and use the distortion and output sections to tailor the output levels. Distortion type has an effect on these set points, so keep that in mind.

   The INPUT level can be voltage controlled via modulation sources from 5V to 10V in amplitude. Patch a control

voltage into the **IN LVL** jack and use the INPUT potentiometer to adjust the overall gain. Modulating the INPUT VCA can offer dramatic effects and variations through the Triptych.

2. **VOLTAGE CONTROLLED MULTI-MODE FILTER**

   The VCF is the first major component of the Triptych. The filter slope is -12dB per octave. Low-pass, Band-pass, and High-pass filter topologies can be selected via the LP/BP/HP switch located in the upper middle of the module.

   CUTOFF controls the cutoff frequency of the filter.

   RES controls the resonance amount up to self-oscillation, denoted by the sine wave symbol.

   CV inputs are provided for CUTOFF and RES, with the addition of a CV attenuator for the CUTOFF amount. The VCF will track 1V per octave when the CUTOFF CV attenuator is set to maximum level.

   ★The VCF's position in the signal path may be altered via the VCF PRE/POST Button. When PRE is selected, the button LED will be off and the VCF position will be set after the INPUT VCA and before the remaining sections of the Triptych. When POST is selected, the button LED will be on and the VCF position will be set to last in the signal path, immediately before the OUTPUT VCA.

3. **VOLTAGE-CONTROLLED DISTORTION**

   The VCD is the second major component of the Triptych. This section features two unique distortion modes. As mentioned previously, the INPUT section will govern the overall available depth of the distortion effects and should be used accordingly along with the **DISTORTION** control potentiometer.

   Immediately above the **DISTORTION** control is the Distortion Mode button. This toggles between Type I (LED off) and Type II (LED on). Both types offer soft clipping and gain at modest settings. When driven more aggressively via the INPUT level and **DISTORTION** control, the two types will exhibit the following behavior:

   Type I – Fold and Clip: The input waveform becomes saturated before folding sharply inward upon itself. The gain of the unfolded portions then increases at a high rate and becomes hard clipped with slightly peaking rising and falling edges (depends on the symmetry of the input waveform). See APPENDIX for a visual.

   Type II – Re-Fractal Fold and Clip: The input waveform becomes saturated before folding mildly inward upon itself. A sharp refractory peak quickly develops and bursts in the opposite direction. The overall gain of the waveform then increases at a high rate and becomes hard clipped with peaking rising and falling edges (depends on the symmetry of the input waveform). This type results in an overall higher amplitude output. See APPENDIX for a visual.

4. **VOLTAGE-CONTROLLED FLANGE-COMB**

   The final component of the Triptych and the most expressive and potentially destructive of the three. Effects range from fast delays to flanging and comb filtering. This is a resonant effect and can be very aggressive, especially when processed through the Distortion section. While most BBD effects employ a simple low-pass filter in the feedback loop to mitigate noise and reduce the clock feed-through, this design intentionally allows higher frequency material, including clock noise to pass into the feedback (REGEN) VCA. In fact, a slightly resonant effect is applied before feedback (REGEN) with the intention of enhancing edgier, high-frequency content to pass back to the input, resulting in more characterful and potentially extreme effects.

   SWEEP controls the clock speed of the analog **BBD,** the device responsible for producing the Flange-Comb effect. The corresponding LO/HI button toggles the frequency range of the clocking oscillator. When the LO setting is engaged (LED off), scanning the SWEEP potentiometer from min to max produces a fast delay that evolves into flanging and ends in some comb filtering. The HI setting (LED on) begins with flanging and quickly covers a broader range of comb filtering. LO/HI switching can also be voltage controlled with any signal surpassing 1.2V and up to a frequency of about 1 kHz.

SWEEP can be voltage controlled via the SWEEP jack and associated SWEEP CV attenuator.

REGEN controls the amount of feedback into the BBD and can be pushed into self-oscillation. Two types of Regeneration feedback are selected via the associated INV/NRM Button. INV (inverted) is selected when the LED is off, NRM (normal) is selected when the LED is on. Each of the feedback types exhibits a unique sound profile and affects the signal in unique ways. INV/NRM switching can also be voltage controlled with any signal surpassing 1.2V and up to a frequency of about 1 kHz.

REGEN can be voltage controlled via the REGEN jack and associated REGEN CV attenuator.

DRY-WET controls the mix between the Flange-Comb section and the previous sections of the Triptych, depending on the current routing configuration. It is possible to completely bypass the Flange-Comb by turning this control to the minimum setting.

The DRY-WET cross-fader may be voltage controlled via the DRY-WET jack.

5. **DISTORTION/COMB ROUTE BUTTON**

   This button governs the signal path order between the DISTORTION and FLANGE-COMB sections. The distortion is routed into the Flange-Comb section when the LED is off, The Flange-Comb is routed into the Distortion when the LED is on. The latter option is by far the most destructive and at times chaotic but will be tamed at modest settings with pure annihilation possible at the extremes. The position of the VCF will either precede the DST/CMB sections or follow them, depending on the selected VCF routing option (detailed in the ROUTING SCHEMES section).

6. **OUTPUT VCA**

   The OUTPUT jack, OUTPUT potentiometer, and OUT LVL CV jack make up the Output VCA. Sounds leave the Triptych from the OUTPUT jack. Adjust the gain or attenuation via the OUTPUT control potentiometer. A fair amount of gain is available so expect a hot signal if input and distortion levels are near maximum. Output can exceed 23V peak to peak, which will happily overdrive (**or clip**) anything you patch down the line.

   The OUTPUT level can also be voltage controlled via modulation sources from 5-10V in amplitude. The maximum level is attained with 8-10V, typically from an envelope generator but LFOs also work well. Patch a control voltage into the OUT LVL jack and use the OUTPUT potentiometer to adjust the signal level.

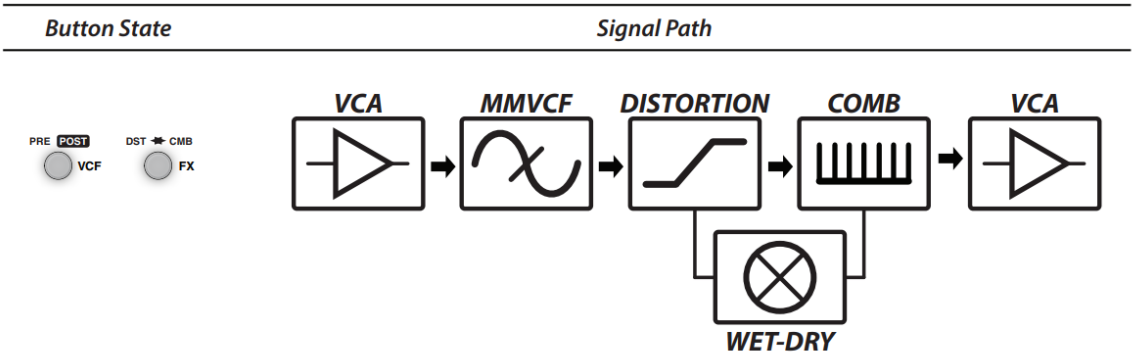
SIGNAL PATH ROUTING SCHEMES

PRE-FILTER ROUTING MODES:

The following two schemes involve the Multi-Mode VCF section immediately following the Input VCA. In general, this configuration is suited for but not limited to input signals involving a higher order of harmonic content. For instance, if the input is a square wave, the distortion section will merely add gain without wave-folding the signal. The VCF can round off the edges of the square waveform thereby allowing the distortion circuitry to work to its full potential. Very dynamic distortion effects can be realized by varying Cutoff, Resonance, and distortion levels when processing square waves and more complex signals such as a drum track or individual percussion sounds. That being said, experimentation with all signal types is encouraged and can also produce interesting results.

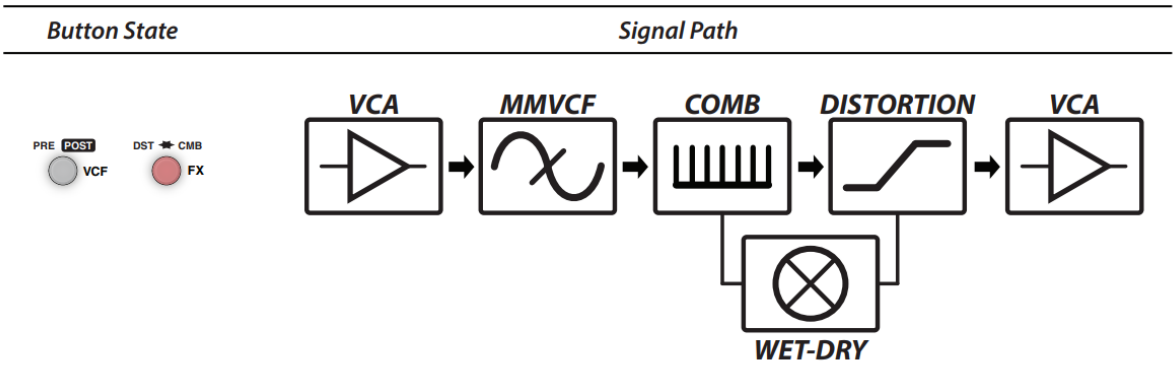
The Pre-Filter routing schemes may also reveal the unbridled BBD clock noise and feedback, most notably with particular Cutoff settings and even more so when the Distortion follows the FLANGE/COMB. If this noise is not desired, try using CVs for the Output VCA, DRY-WET control, or both controls to govern the noise, dynamically.

Graphical representations of the Pre-Filter Signal Paths along with the associated button states are shown below. General notes for each mode are provided for reference.



➡ Great for, but not limited to signals with high or complex harmonic content.
Use with drum tracks or individual percussion
Use with square waves, complex drones, full mixes, etc.

➡ Can be noisy with particular VCF settings and/or less harmonically dense input signals.
Use DRY-WET controls and/or DRY-WET and Output VCA
CV to dynamically control noise if not desired.



➡ Most destructive and chaotic mode due to the nature of processing a BBD through the Distortion.
Higher Input and Distortion levels may be needed to enhance these effects.

➡ Great for, but not limited to signals with high or complex harmonic content.
Use with drum tracks or individual percussion
Use with square waves, complex drones, full mixes, etc.

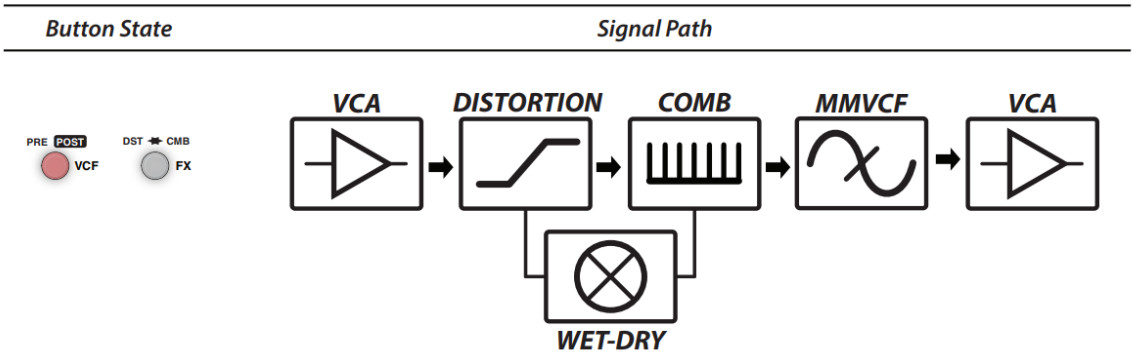
➡ Can be noisy with particular VCF settings and/or less harmonically dense input signals.
Use DRY-WET controls and/or DRY-WET and Output VCA
CV to dynamically control noise if not desired.

POST-FILTER ROUTING MODES:

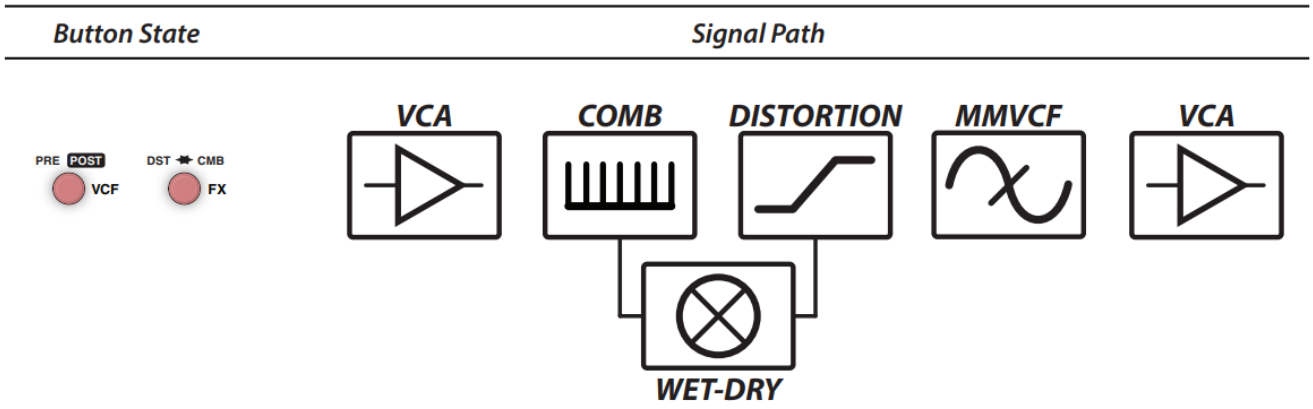
The final two schemes involve the Multi-Mode VCF section placed immediately before the Output VCA, after the Distortion and Flange/Comb sections. In general, these configurations are suited for all signal types.

Placing the VCF last in the chain allows for greater control over the frequency content and overall ability to ‘carve out’ the sound. The wave-folding Distortion and Flange/Comb add harmonic content while the VCF removes or isolates those harmonics. These routing configurations are great for setting up a dirty acid VCF and shaping Karplus’s strong effects from the BBD section.

Graphical representations of the Post-Filter Signal Paths along with the associated button states are shown below. General notes for each mode are provided for reference.



➡ Generally great for signals of all types.
Most ‘standard’ configuration.
Create a very characterful VCF
Add harmonics to simple waveforms – like sine and triangle waves
Great on drums, full mixes, etc.
Dirty acid machine #1

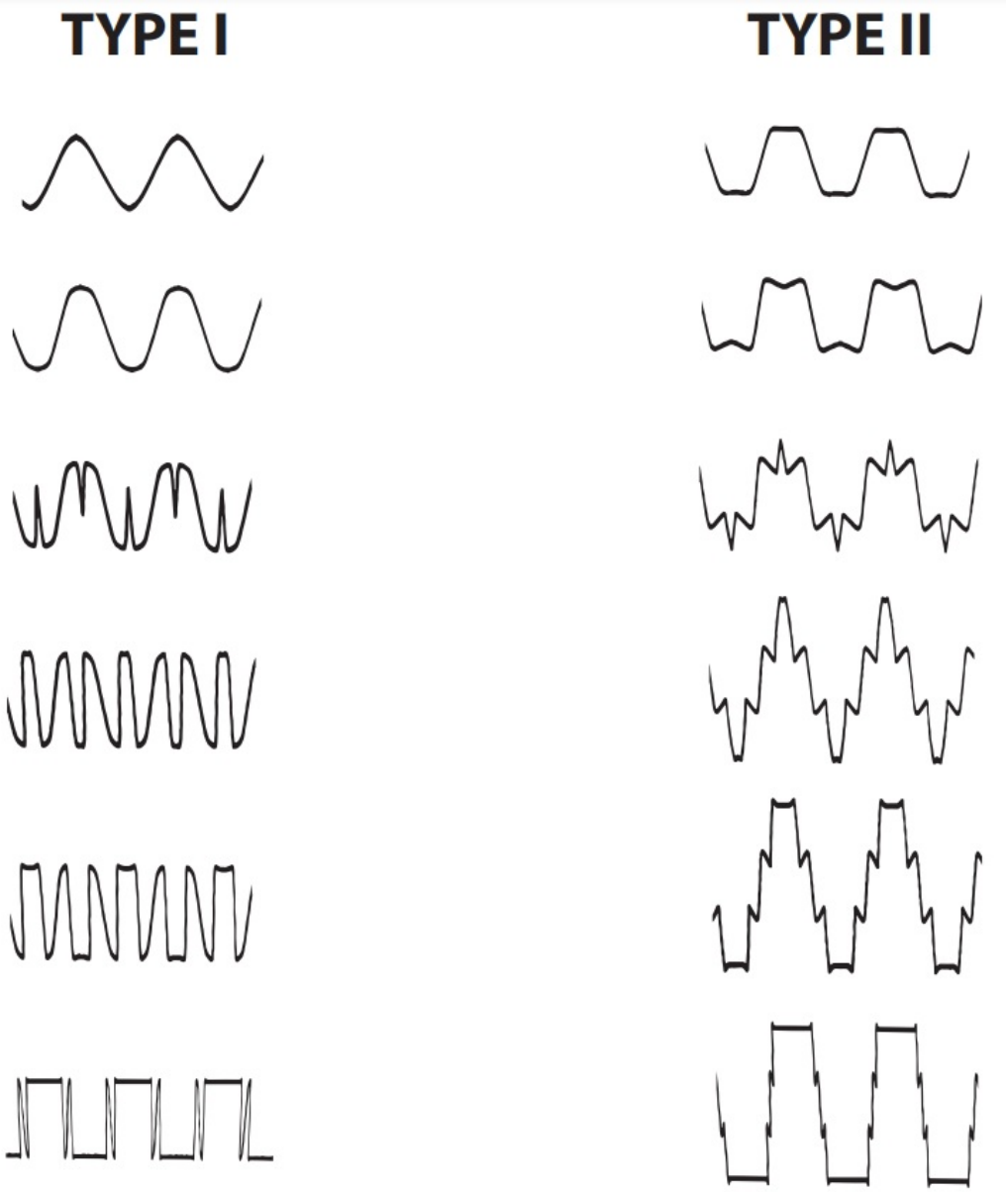


➡ Most destructive and chaotic -can be tamed using the VCF last in the chain

➡ Generally great for signals of all types. Although signals with sharp transients produce the best effects through the BBD section. A fast envelope into the Input VCA CV can impart this characteristic onto any signal.
Create a very characterful VCF
Add harmonics to simple waveforms – like sine and triangle waves
Great on drums, full mixes, etc.
Dirty acid machine #2

APPENDIX

DISTORTION WAVEFORM EXAMPLES:
TRIANGLE WAVE input is shown with INPUT set @ U and increasing DISTORTION and INPUT levels



PATCH EXAMPLES COMING SOON…

Documents / Resources

	BII TRIPTYCH [pdf] User Manual BII, TRIPTYCH, Multi-tiered, Module, BII Electronics