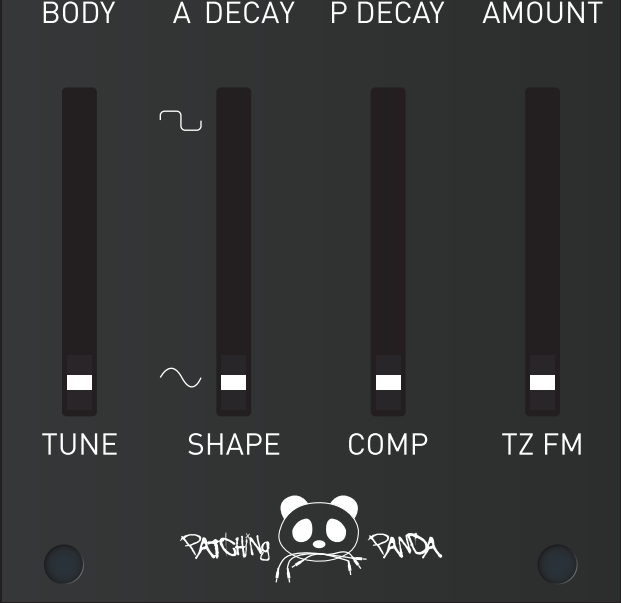




# BLAST USER MANUAL





## INTRODUCTION:

Designing a kick drum presents notable challenges due to the meticulous balance needed between low-end depth, mid-range impact, and high-frequency clarity. Achieving a powerful yet refined sound requires the careful manipulation of sonic elements to create a kick that is both impactful and harmonically cohesive.

The kick drum's dynamic structure is essential: it must have sufficient punch to cut through the mix while maintaining a sense of sustain or "body" for fullness. Fine-tuning compression is crucial to preserve this dynamic integrity.

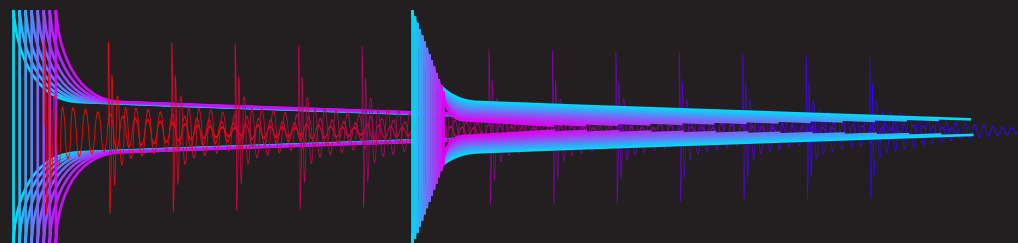
The transient defines the kick's percussive identity, but balancing it is delicate; overemphasis can result in harshness, while too subtle a transient may leave the kick lacking definition. Effective use of envelope shaping, compression, and selective distortion is needed to refine the initial strike without compromising other frequency areas.

The Blast module is meticulously crafted to deliver a clean, punchy, and versatile kick drum. Its intuitive controls allow you to shape a reliable and adaptable kick that suits a wide range of musical styles, combining all these elements to deliver exceptional sonic quality.

## INSTALLATION:

- \* Disconnect your synth from the power source.
- \* Double check polarity from the ribbon cable. Unfortunately if you damage the module by powering in the wrong direction it will not be covered by the warranty.
- \* After connecting the module check again you have connected the right way, the red line must be on the -12V





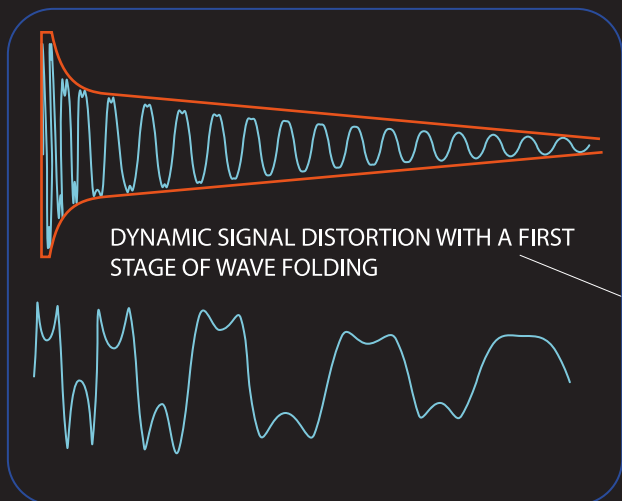
## INSTRUCTIONS

- |                                   |   |
|-----------------------------------|---|
| <b>A</b> Trigger input            | <b>O</b> Pitch Decay Control                |
| <b>B</b> Decay envelope (+) 0-10V | <b>P</b> Pitch Decay Amount Control         |
| <b>C</b> Decay envelope (-) 0-10V | <b>Q</b> Tune Control 15HZ - 115HZ          |
| <b>D</b> Signal Output            | <b>R</b> Shape Control with Dynamic Folding |
| <b>E</b> Accent Input             | <b>S</b> Compression with Soft Clipping     |
| <b>F</b> TZ FM input              | <b>T</b> TZ FM Control                      |
| <b>G</b> AM Input                 |   |
| <b>H</b> Shape CV Input           |   |
| <b>I</b> Manual Trigger Btn       |   |
| <b>J</b> Amplitude Decay CV       |   |
| <b>K</b> Pitch Decay CV Input     |   |
| <b>L</b> V/OCT Input              |   |
| <b>M</b> Body Control             |   |
| <b>N</b> Amplitude Decay Control  |   |



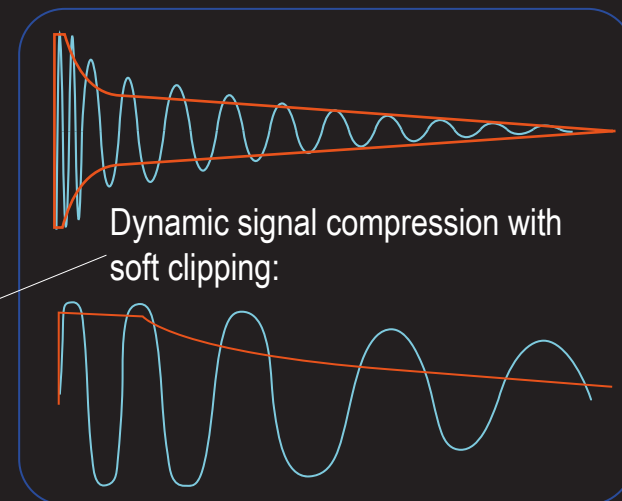
Since the inverted envelope is derived directly from the kick drum's shape, the ducking effect will precisely match each kick hit, whether hard or soft. This results in a consistent mix where the kick drum always has space to punch through, regardless of its dynamic variation.

Dynamic saturation in a kick drum is a form of nonlinear distortion that reshapes the waveform to introduce rich harmonic content and enhance its punch. Wavefolding works by "folding" parts of the waveform back onto itself once it exceeds a certain threshold, creating additional peaks and valleys.



Compression is essential in designing a punchy kick drum because it allows for precise control to create impact and clarity. It can boost the sustain portion of the kick drum after the initial transient, which makes the body of the kick sound fuller and more substantial. This balance between a punchy attack and solid sustain helps the kick sound more robust without overwhelming the mix.

Adjusting the Body along with the compression can add a subtle harmonic distortion, which can enrich the kick drum's tonal character, giving it more depth and presence. This added warmth or grit can enhance the perceived punchiness of the kick, especially in the low-mid and mid frequencies.



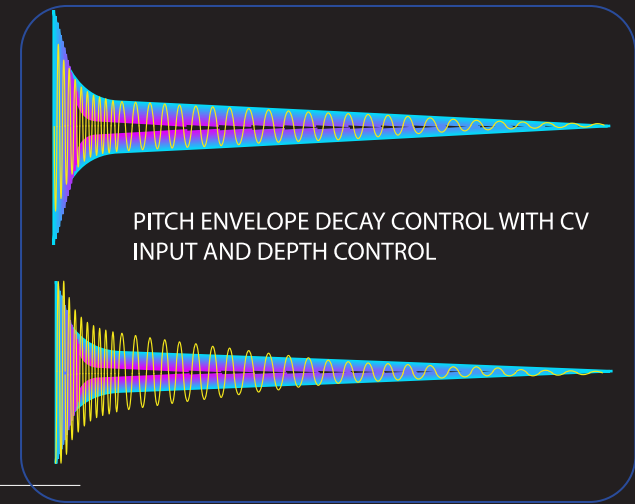
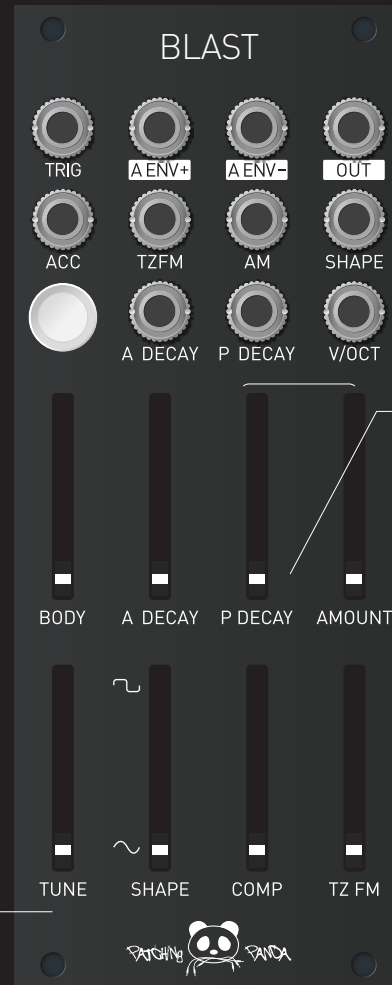
Accurate Low-End Foundation: The sine wave provides the fundamental frequency or "body" of the kick drum.

Tuning it precisely ensures the kick sits well in the mix, particularly in the low-end.

A tuned kick harmonizes with the key of the track, which prevents frequency clashes with bass and other low-frequency elements, creating a cleaner and fuller mix.

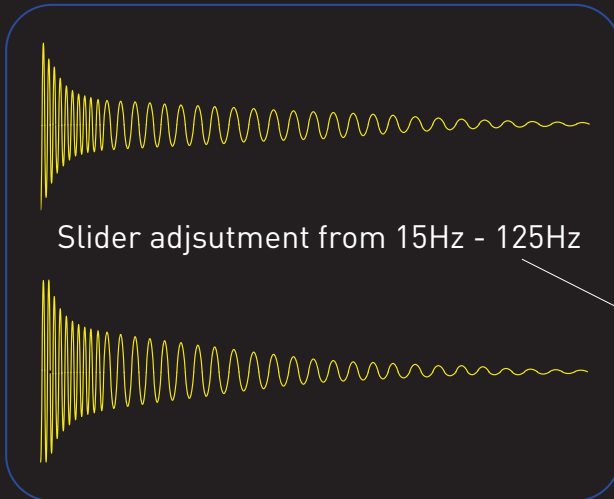
Precisely adjusting the tuning of the sine wave and the pitch envelope is essential in kick drum design because it directly influences the tonal quality, clarity, and overall impact of the kick this adjustments are critical for designing a kick drum that has a solid, well-defined low-end foundation, a controlled and impactful transient, and a tone that fits harmoniously within the mix. This precision ultimately results in a kick drum that is both powerful and musically cohesive.

## Tune and Pitch Decay adjustments

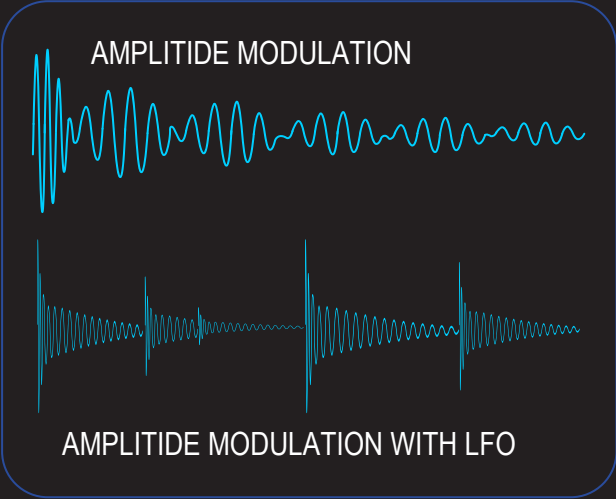
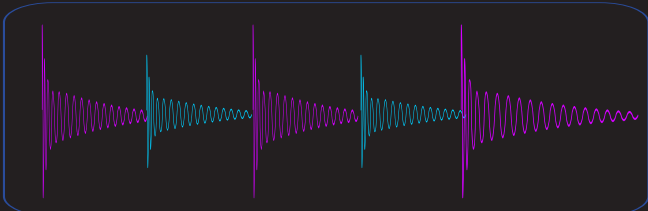


The pitch envelope creates a rapid pitch drop that forms the initial "click" or transient of the kick. Fine-tuning the envelope's starting and ending pitches helps control the punch and sharpness of this transient, making the kick feel more defined. Adjusting the sine wave and pitch envelope together allows for a balance between the initial impact and sustained bass tone. Different genres call for different kick drum characteristics. This level of control over tuning and pitch enveloping gives you the flexibility to design a sound with the exact character and impact you want.

Tune and Pitch Decay adjustments together allow you to craft a kick drum that's impactful, harmonically aligned, and adaptable to the specific needs of your track. Balancing these elements is key to achieving a polished, powerful kick drum sound.

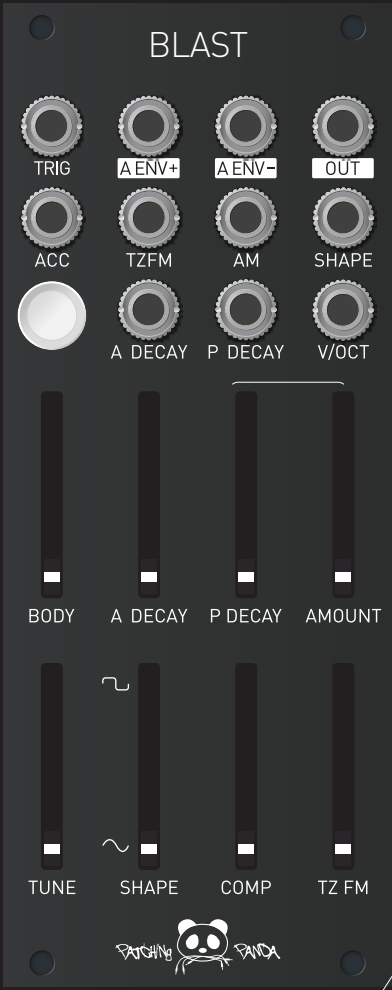


The accent influences the volume, tonal characteristics of each drum hit and also affects every effect applied to the signal.



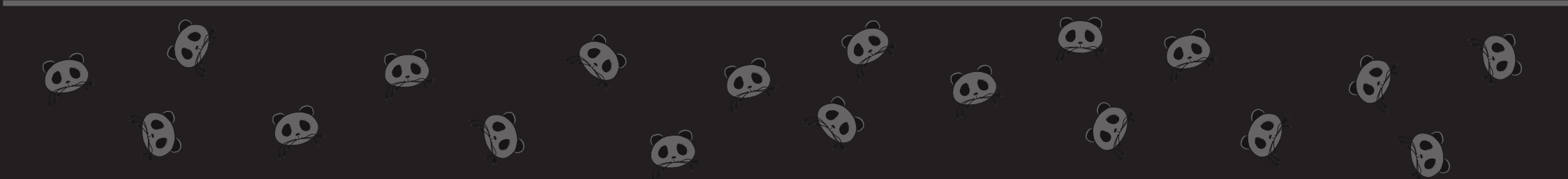
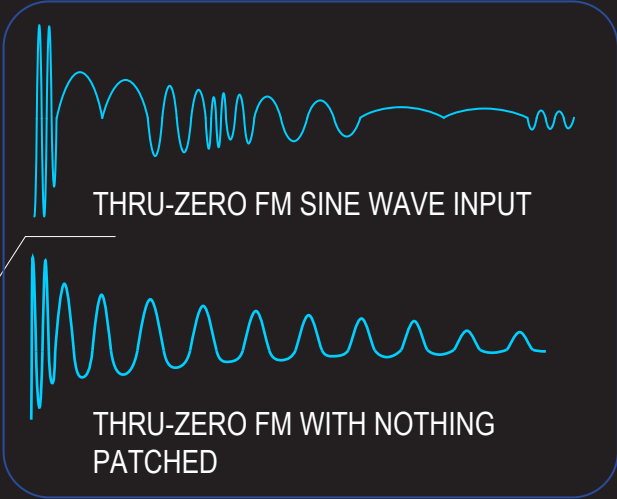
AM synthesis is excellent at creating complex harmonics, making it ideal for sounds like gongs, cymbals, and chimes. These tones have a bright, shimmering quality that works well in metallic percussion. When applied at lower modulation rates, this produces non repeating amplitude patterns, creating a more dynamic and expressive pattern.

COMPLEX MODULATIONS



Thru-zero FM produces a variety of harmonically complex sounds, ranging from metallic and percussive tones to lush, evolving pads and gritty, industrial textures. Its unique modulation capabilities make it a powerful tool for generating sounds that are detailed, expressive and often unpredictable

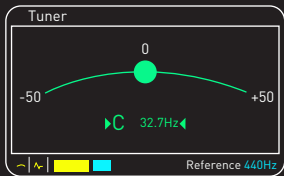
With no input signal patched, the output is internally routed to the thru-zero FM (TZFM) circuit, introducing distortion that alters the waveform and reduces low-end frequencies.





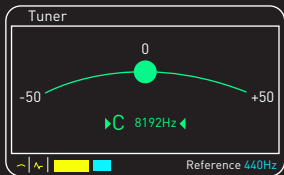
CALIBRATION:

- 1. Set all faders to minimum, except the Decay fader, which should be set to maximum.
- 2. Connect the CV out from your sequencer to the V/OCT input.
- 3. Send triggers to the trigger input and route the output to your DAW.
- 4. In your DAW, open a tuner VST to monitor the notes.
- 5. Send a C1 note from your sequencer. While monitoring the output in your DAW, adjust the multiturn trimmer until the tuner reads C1.



DAW

- 6. Send a C9 note from your sequencer. Monitor the output in your DAW and continue adjusting the multiturn trimmer until the tuner reads C9.



DAW

- 7. Repeat the process as needed by alternating between C1 and C9 until the tuning is consistent.

Once finished, unplug the cable from the V/OCT input, set the Tune fader to maximum, and adjust the C1 trimmer until the tuner reads A2.

RESET TRIMMER:

This trimmer sets the waveform to start from 0V, ensuring the initial transient isn't too harsh. The most accurate way to calibrate the reset point is to use an oscilloscope. If you don't have one, you can use the free oscilloscope VST available in VCV Rack: CountModula Oscilloscope. along with a DC-coupled audio interface

Steps to Reset the Waveform from 0V Using the VCV Rack VST:

- 1. Set Up the MIDI Channel:  
Create a MIDI channel in your DAW with the VCV plugin. Add the "Audio 16" and "Quad Trace Oscilloscope" modules in the VCV Rack plugin.
- 2. Route Blast Output to Ableton and VCV:  
Send the output from the Blast module to two separate channels in Ableton:  
Route one channel to the main output for monitoring.  
Route the second channel to the VCV plugin, selecting submenu channels 1-2 in the "Audio 16" module.



3. Send Trigger Patterns:

Send a 16-trigger pattern to the Blast module. Set all faders to minimum, except the Decay fader, which should be set to maximum. Adjust the Tune fader until the output reads C1.

4. Configure VCV Rack Connections:

In the VCV Rack plugin:

Connect Device Channel 1 from the "Audio 16" module to CH1 of the "Quad Trace Oscilloscope."  
Also connect Device Channel 1 to the oscilloscope's trigger input.



5. Adjust Oscilloscope Settings:

Adjust the level, time, and holdoff settings in the "Quad Trace Oscilloscope" module according to last reference picture.

6. Generate Short Kick Drums:

Lower the Decay slider on the Blast module until you see short kick drum waveforms, similar to the ones shown in the next picture.

7. Set the Reset Trimmer to Minimum:

Turn the Reset Trimmer on the Blast module to its minimum position. Observe the oscilloscope for a large transient, as shown in the reference picture. You should reach a point where you cannot turn the trimmer further.

8. Fine-Tune the Reset Trimmer:

Slowly turn the Reset Trimmer in the opposite direction until the transient signal resets to start at 0V. Use the reference picture to confirm the correct waveform.

