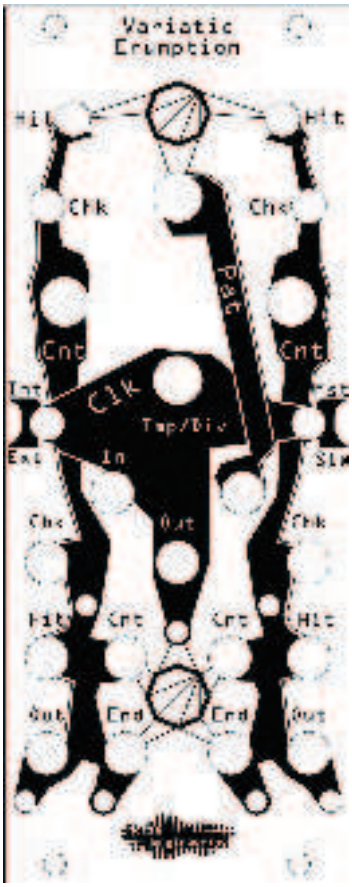
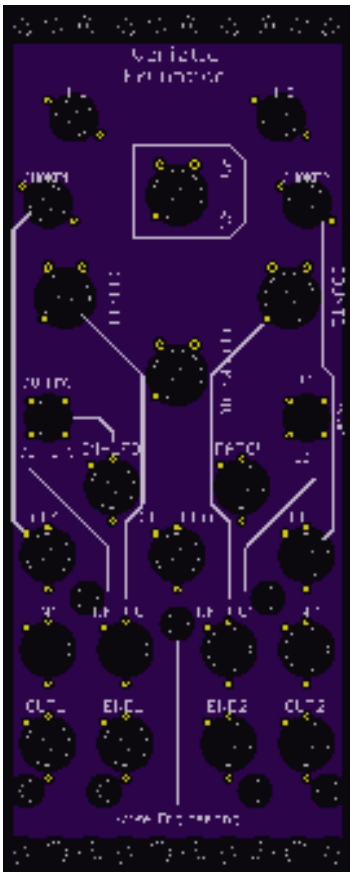
Noise Engineering

Variatic Erumption

Dual-Burst Generator with built-in LFO





Overview

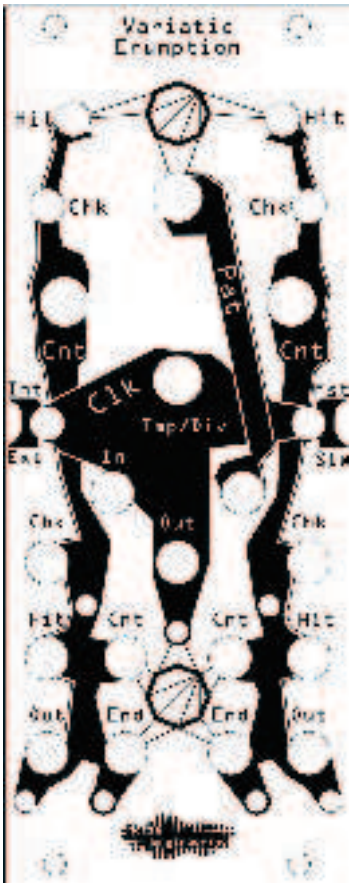
Type	Burst Generator
Size	10HP Eurorack
Depth	.8 Inches
Power	2x5 Eurorack
+12 mA	50
-12 mA	5

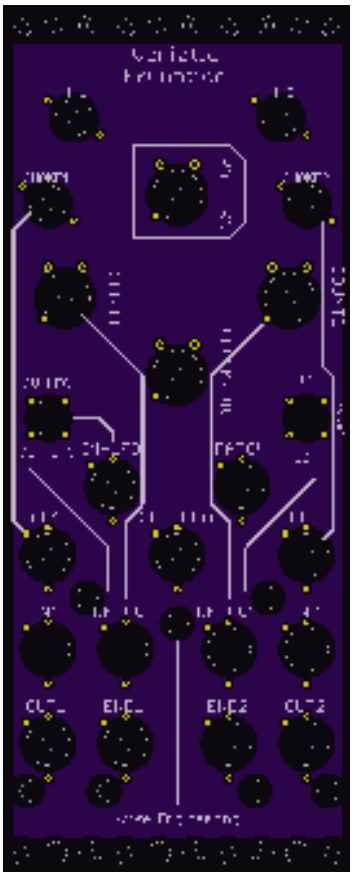
Variatic Erumption is a dual-burst generator. When triggered, it produces a controllable sequence of gates synchronized to a LFO. A 1v/8va LFO is included. Any external LFO/clock may optionally be used. Bursts can be terminated early with the choke. Burst length can be controlled as well as the pattern used for the burst.

Noise Engineering

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Patch Tutorial

Put INT/EXT switch into the INT position. Put FST/SLW switch into the SLW position.

Set PAT knob fully CCW. Set left CNT fully CW.

Connect the left OUT and END to two gateble modules such as an envelope or Basimilus Iteritas.

Hit the left HIT switch. A long burst will be generated which will blink the orange LED and trigger the attached device. At the end of the burst the red LED will blink and any device attached to the end out will trigger.

Adjusting the TMP knob while hitting HIT will change the burst speed. The tempo can be controlled by CV (CLK IN). Send an envelope or LFO to modulate the burst rate. The tempo range can be changed with the FST/SLW switch. It has three positions each is half tempo of the position above. The CNT knob/jack controls the number of gates in the burst. The PAT knob/jack controls the pattern of the burst.

Connect an external trigger source to the HIT jack to trigger the burst externally.

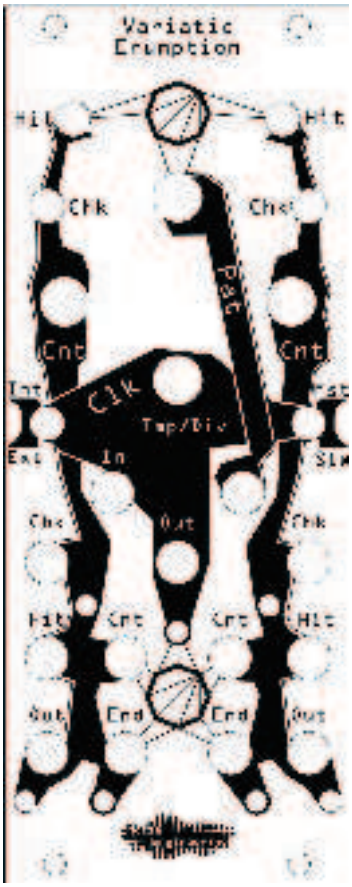
Hitting the CHK switch or sending a trigger to the CHK jack will terminate the burst.

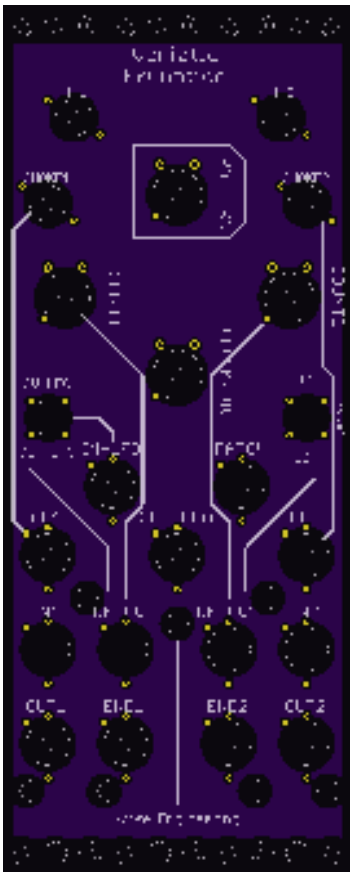
To use an external clock flip the clock switch to EXT and send a clock into the IN-LFO. Everything will work the same except it will use the external clock for output timing. In this mode the DIV knob acts as an adjustable divider to the clock input. To match the external clock without division put DIV in the fully CCW position.

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Interface - LFO

Int/Ext

This switch selects the burst clock source between the internal LFO or an external clock.

In - Jack 0-8v

In internal LFO mode this jack is a 1v/8va CV for the internal LFO and has 8 octaves of range. In external mode, it is a clock input. Burst gate length follows both rising and falling edges so clock duty cycle is maintained between LFO, Out and End.

Tmp/Div - Knob

In internal LFO mode, this knob controls the LFO tempo. It allows 4 octaves of control. In external mode, it is a controllable clock divider with 1-32 divisions.

Fst/Slw - Toggle

This switch controls the base tempo of the internal LFO. It is a three-position switch. Each position is half tempo of the position above. The lowest tempos in each range are: 1/2Hz (30 BPM), 2Hz (120 BPM) and 8Hz (480 BPM).

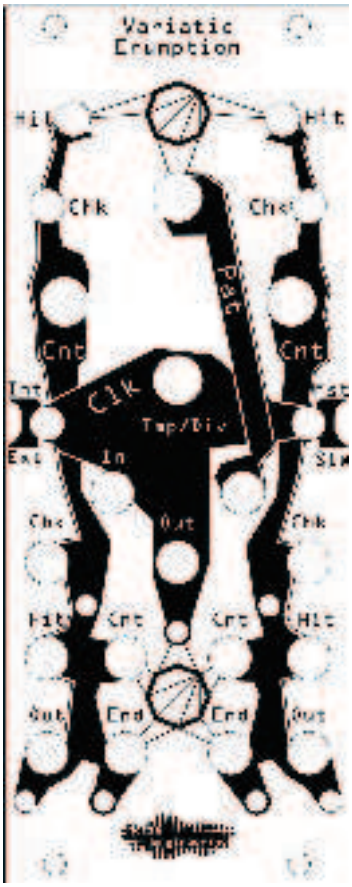
Out - Jack

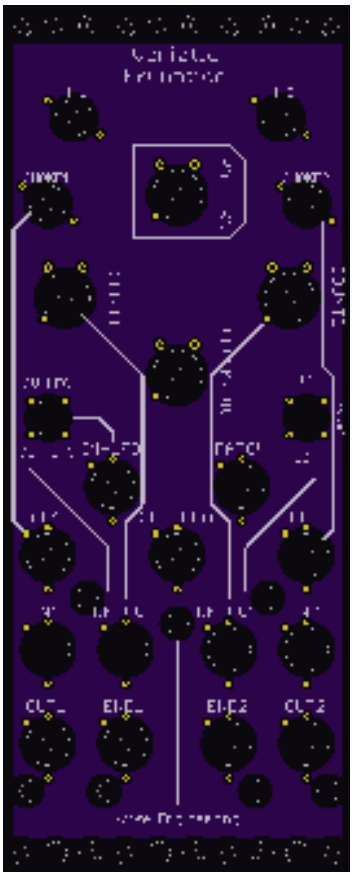
This jack outputs the LFO used for burst generation.

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Dual-Burst Generator with built-in LFO





Interface - Burst

Hit - Jack
This gate input will start the burst on a rising edge. If using internal clock mode, it will also reset the phase of the internal LFO to match the HIT phase.

Hit - Tactile
This tactile switch will start the burst when depressed. If using internal clock mode it will also reset the phase of the internal LFO to match the HIT phase.

Chk - Jack
This gate input will terminate the current burst on a rising edge.

Chk - Tactile
This tactile switch will terminate the current burst when depressed.

Cnt - Jack 0-8v
This jack allows to control the burst count with a control voltage.

Cnt - Knob
This knob allows the control of the burst count. It acts as a scalar when using an external CV.

Out - Jack
This gate output sends a burst based on the clock when triggered with a Hit. There is an orange LED to indicate the current output state.

End - Jack
This gate output sends a pulse based on the clock at the next clock following the end of a burst.

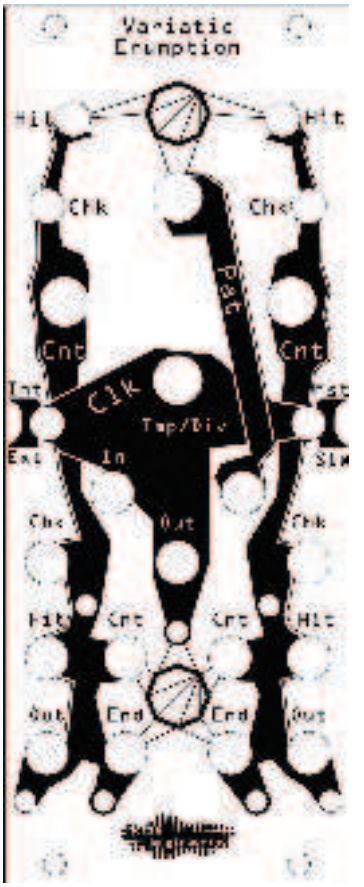
Pat - Jack 0-8v
This jack allows CV control over the pattern.

Pat - Knob
This knob controls the current pattern used for the burst. Built-in patterns are documented in detail on the following page. When rotated fully CW this knob will double the maximal length of the pattern to 64 gates. When in double length mode the bust pattern is the same as when fully CCW (every clock outputs a gate).

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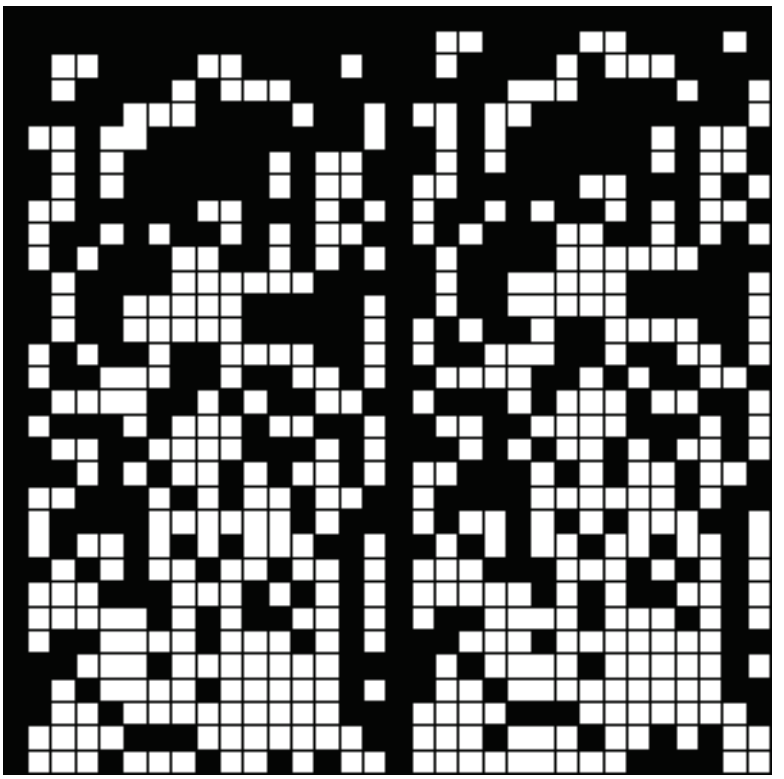
Variatic Erumption

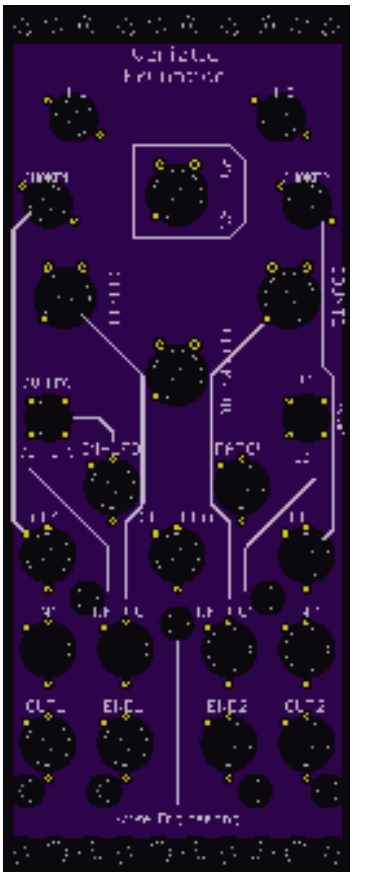
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Patterns

65535
65535
48371
61819
28447
32713
38891
38891
23801
38317
22133
57467
31771
31771
25013
19853
39619
25693
23603
19031
37561
53309
25253
18731
21617
19777
20749
49223
16651
49171
32993
10513
15361





Variatic Erumption's patterns are based off of the bit-reversed concatenation of two 16-bit prime numbers. Prime numbers are always odd so in binary the lowest bit is always set. Reversing these will always generate a pattern who's first beat is set. Note the first two patterns are not prime as they are all bits set since this is the most simple burst pattern.

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Design Notes

Variatic Erumption started in Cyrus Makarechian's loft when Aaron Funk asked me why there was no burst generator in Eurorack. I responded: "What is a burst generator?". Cyrus sent me some links to existing products and a few days later I had a rudimentary prototype designed and ordered. Many features were suggested by the testers of that first prototype which led to the second prototype. The second prototype is nearly identical to the final module you hold in your hand.

I had very little to do with the overall formulation of the module. It was very much a community product based on the ideas and feedback of friends.



First Prototype

Special Thanks

Kris Kaiser
Aaron Funk
Cyrus Makarechian
Richard Devine
Rodent516
Baseck
Shawn Jimmerson
William Mathewson
Mickey Bakas
Tyler Thompson
Alex Anderson