

Polyphonic Envelope



Attack

Hold

Input
Trigger

CV Tilt IN
Attack Hold Rel. Level

Output
Env.1 Env.2 Env.3 Env.4

Sum OUT



Release

Level

Envelopes/
Cycles

Cascade
timing



Settings (B1-4)
Menus (B5-8)

Envelope
parameters

Envelope
order / tilt

Specifications:

Patch name: Polyphonic Envelope

Firmware: blue-3

System requirements: Droid master, 2x P2B8 (4 pots and 8 buttons)

Inputs:

I1: Trigger to start an envelope cascade. I5-I8: cv in to control the tilt parameters for envelope attack, hold, release and level.

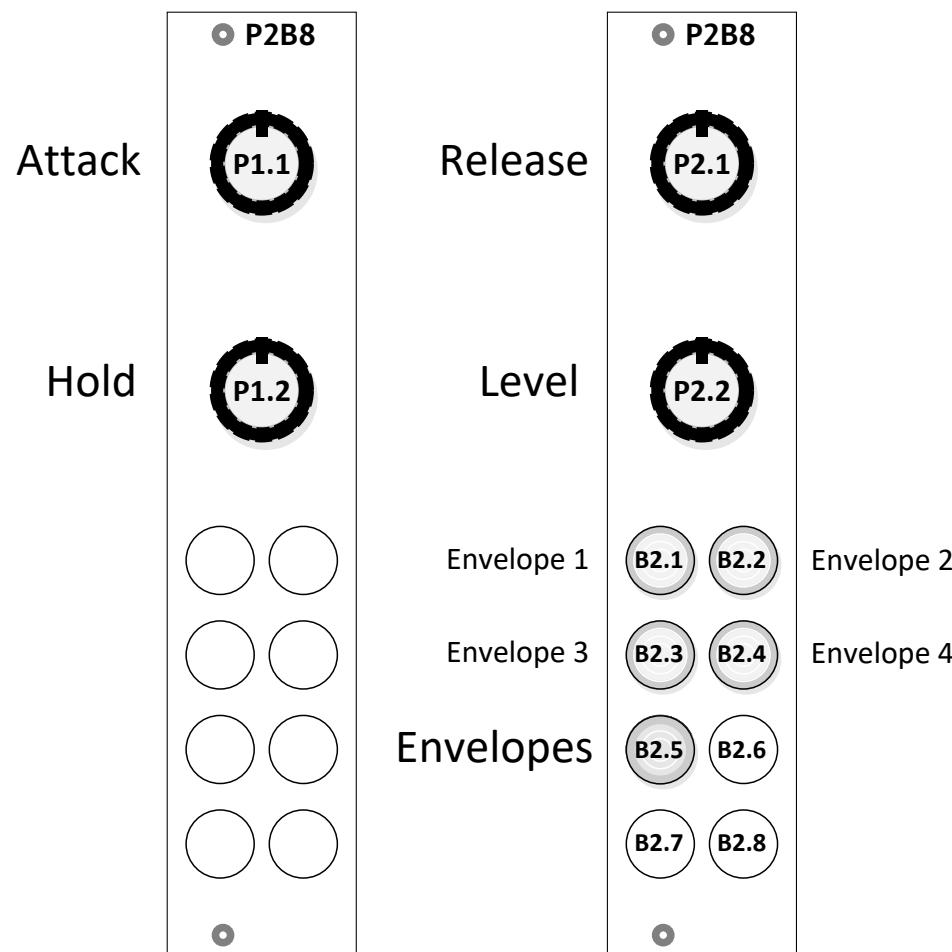
Outputs:

O1-O4: cv out of 4 envelopes. O5: unity out of the sum of all envelopes.

This patch is inspired by the Verbos Electronics module Polyphonic Envelope and comes with an extended feature set. A trigger input starts a cascade of up to 4 attack-hold-release (AHR) envelopes. For each envelope, the times of the AHR phases as well as the hold level can be controlled individually or for arbitrary envelope groups. The cascade can be set to repeat 1-3 cycles, randomly among 1-3 cycles, or indefinitely, transforming the cascade into a kind of complex lfo. The triggers firing the envelopes of a cascade can be set to the end of the release, hold or attack phases, or to change randomly among these. The direction of the cascade can be in upward, downward, pendulum or random orders. For every envelope parameter (level and AHR times), there is an additional tilt parameter, which exponentially increases or decreases the envelope parameters within the cascade progression, relative to their original values. The tilt parameters are also cv-able. The resulting envelopes are routed to 4 outputs as well as to a sum output with unity gain. Examples for optional outputs of envelope triggers or gates (e.g. for a G8 expander) are included at the end of the patch code.

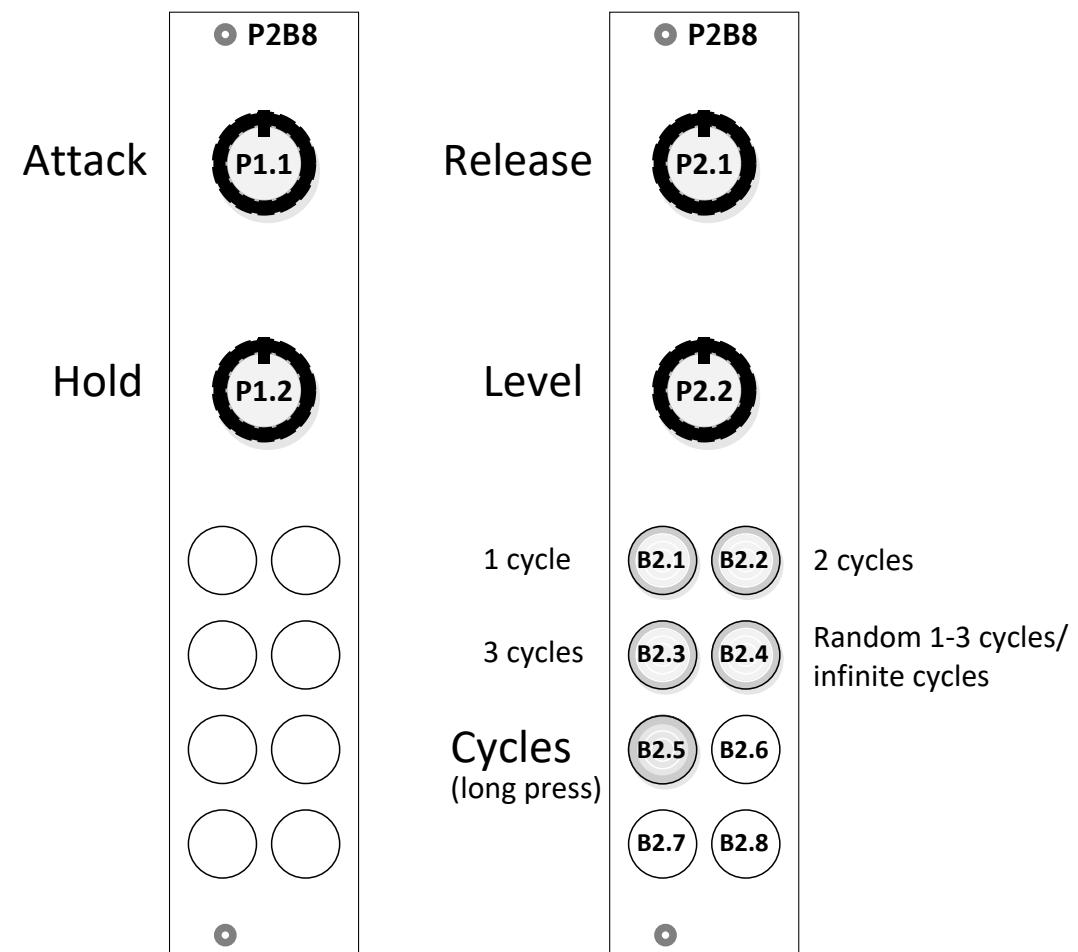
Menu 1: Include envelopes (B2.5)

Here the envelopes that will be included in a successive cascade can be selected. If all 4 envelopes are deselected, a trigger in signal will not activate any envelope. The resulting envelopes are routed to outputs O1-O4 as well as to a sum output O5.



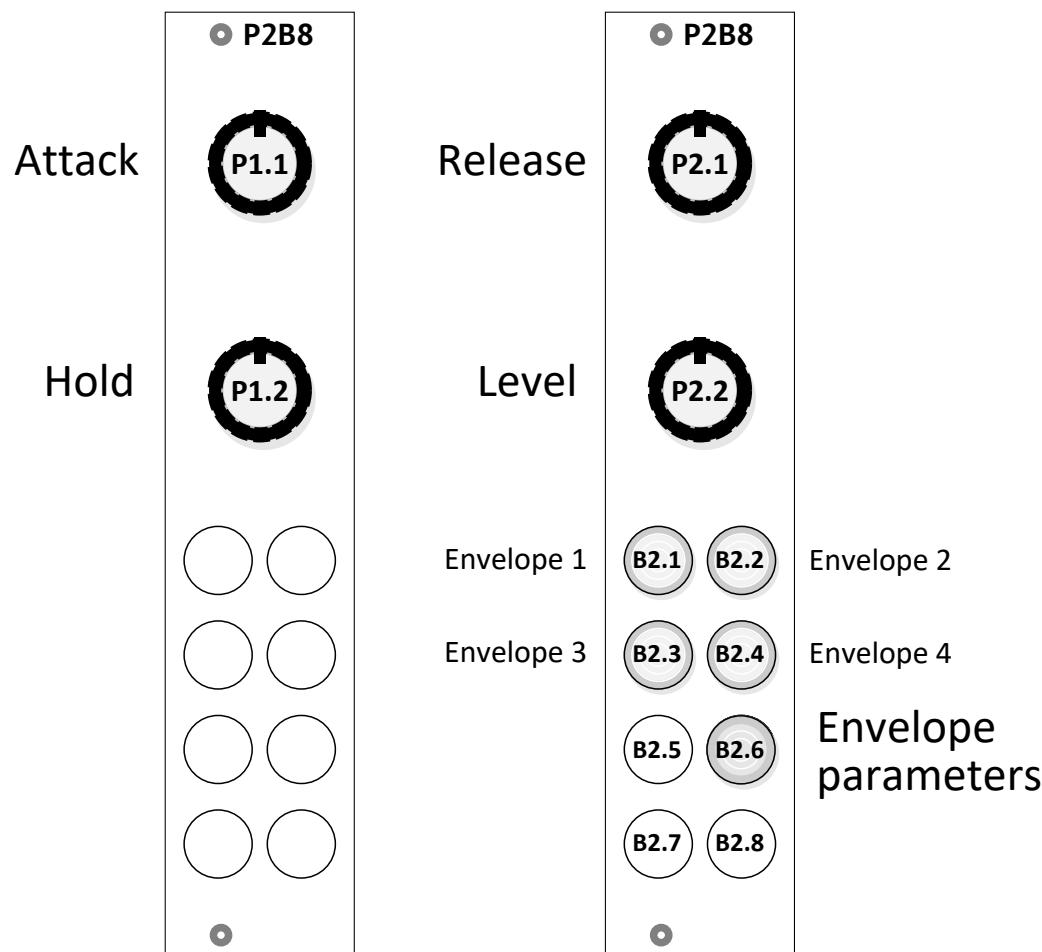
Submenu 1: Number of cycles (B2.5 long press)

A long press on menu 1 provides access to a submenu, indicated by a pulsing led. Here the number of cycles the envelope cascade will repeat is set. The cascade can repeat over 1-3 cycles or randomly between 1-3 cycles. With a long press on button B2.4 the number of cycles is set to infinite (pulsing led), which transforms the outputs into an lfo with a shape of the envelope cascade.



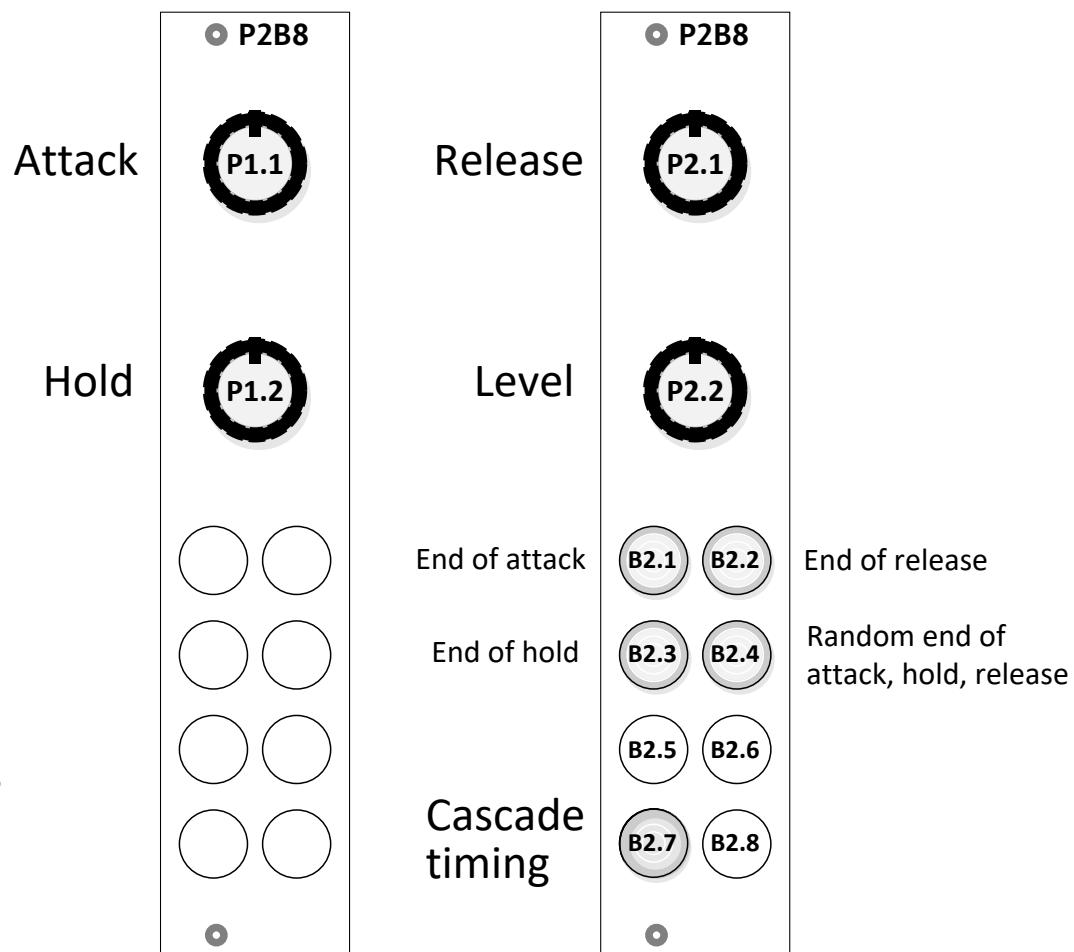
Menu 2: Envelope parameters (B2.6)

The 4 envelopes are of type attack-hold-release (AHR), and for each phase a pot is dedicated to adjust its time. A fourth pot is controlling the level of the hold phase. The setting buttons decide which of the envelopes are affected by changes of the parameter pots. This allows to modify parameters of individual envelopes or of several envelopes simultaneously. This pot assignment remains also when menu 1 or 3 are selected, but is different in menu 4.



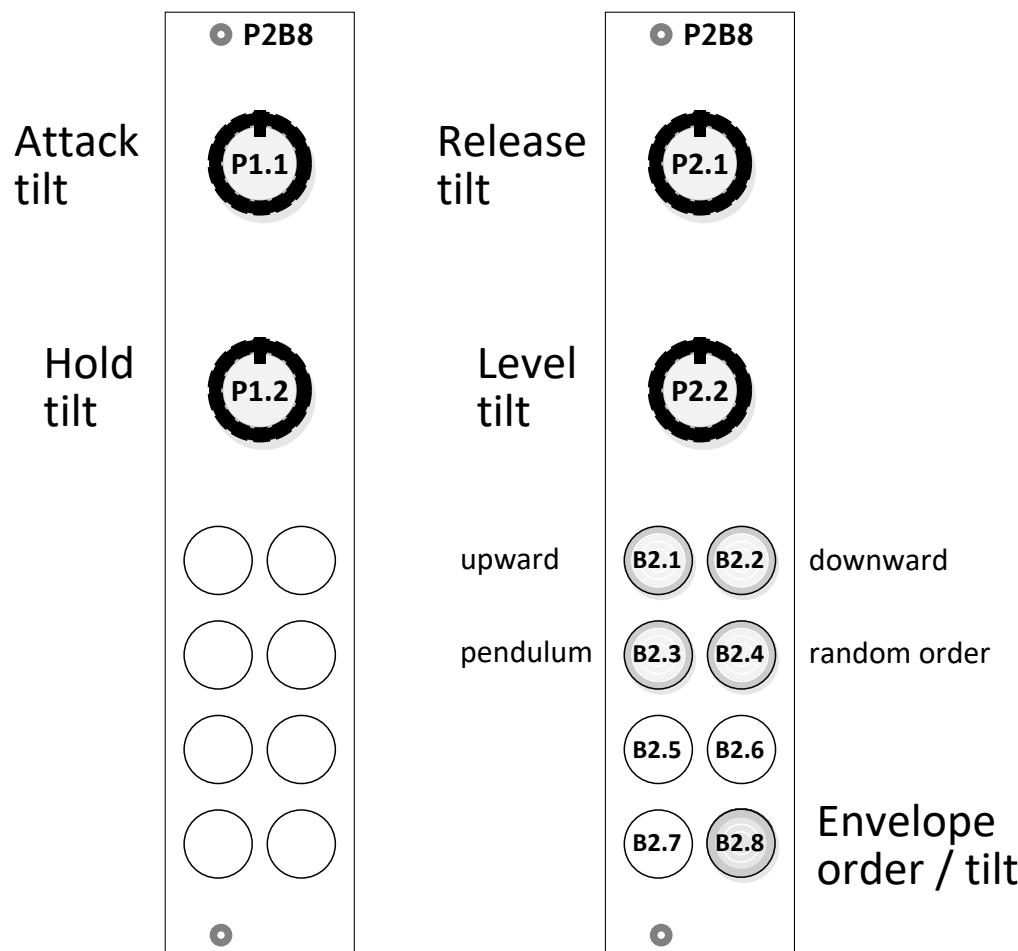
Menu 3: Cascade timing (B2.7)

Here one can define, when the next envelope within a cascade will be triggered. Options are at the end of the release, hold or attack phases, or randomly among these every new envelope cascade. Needless to say, for a given set of envelopes, end of attack transitions will lead to overall shorter cascades than end of release transitions. The choice here has a strong impact on the envelope sum output. For end of attack transitions, lower envelope levels may lead to more desirable results.



Menu 4: Envelope order and tilt (B2.8)

The order of the envelopes within a cascade can be upward (from the lowest to highest active envelope number), downward, pendulum (upward followed by downward), or random. For random order, the envelope to be triggered next is randomly changing among the envelopes activated in menu 1. This means that for a cascade of say 4 envelopes, the envelopes that are triggered can consist of any combination, including the possibility of 4 times the same envelope.



Another feature in this menu is the tilt function, which systematically modifies the envelope parameters within a cascade. The pots here take on a bipolar range. Positive values exponentially increase the envelope parameters as the cascade progresses, negative values decrease the parameters accordingly. The changes are relative to their current values set in menu 2. For instance, if you start with 4 identical envelopes, a positive tilt of the hold phase will make envelope 2 hold longer than 1, 3 longer than 2, and 4 again longer than 3. The pots are associated to the tilt function only if menu 4 is selected. If you leave menu 4 by changing to any other menu, the pots return to control the usual envelope parameters, while the values of the tilt parameters remain active of course.