ENDORPHINES®
AIRSTREAMER 4

V.1.0

CONTENT

WARRANTY

1-year warranty guaranteed from the product's purchase date in case of any manufacturing errors or other functional deficiencies during runtime.
The warranty does not apply in case of:

→ damage caused by misuse

→ mechanical damage arising from careless treatment (dropping, vigorous shaking, mishandling, etc.)

→ damage caused by liquids or powders penetrating the device

→ heat damage caused by overexposure to sunlight or heating

→ electric damage caused by improper connecting

The warranty covers replacement or repair, as decided by us. Please contact us via email for a return authorization before sending anything. The customer pays shipping costs of sending a module back for servicing. Device complies with all EU regulations concerning RoHS lead-free manufacturing and WEEE disposal.

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https://www.modulargrid.net/e/modules/browser/vendor:167

For technical requests: **support@endorphin.es**
For dealer / marketing inquiries: info@endorphin.es

INTRO

AIRSTREAMER 4 is an ultra slim envelope generator with looping, ASR and AD modes in 4 hp. Capable of low aliasing audio rate oscillation with 224kHz sample rate, smart sidechain envelope generation along with external CV processing functionality, sample & hold and track & hold – it can find its way into your voice architecture and work as a utility module with a variety of useful applications.

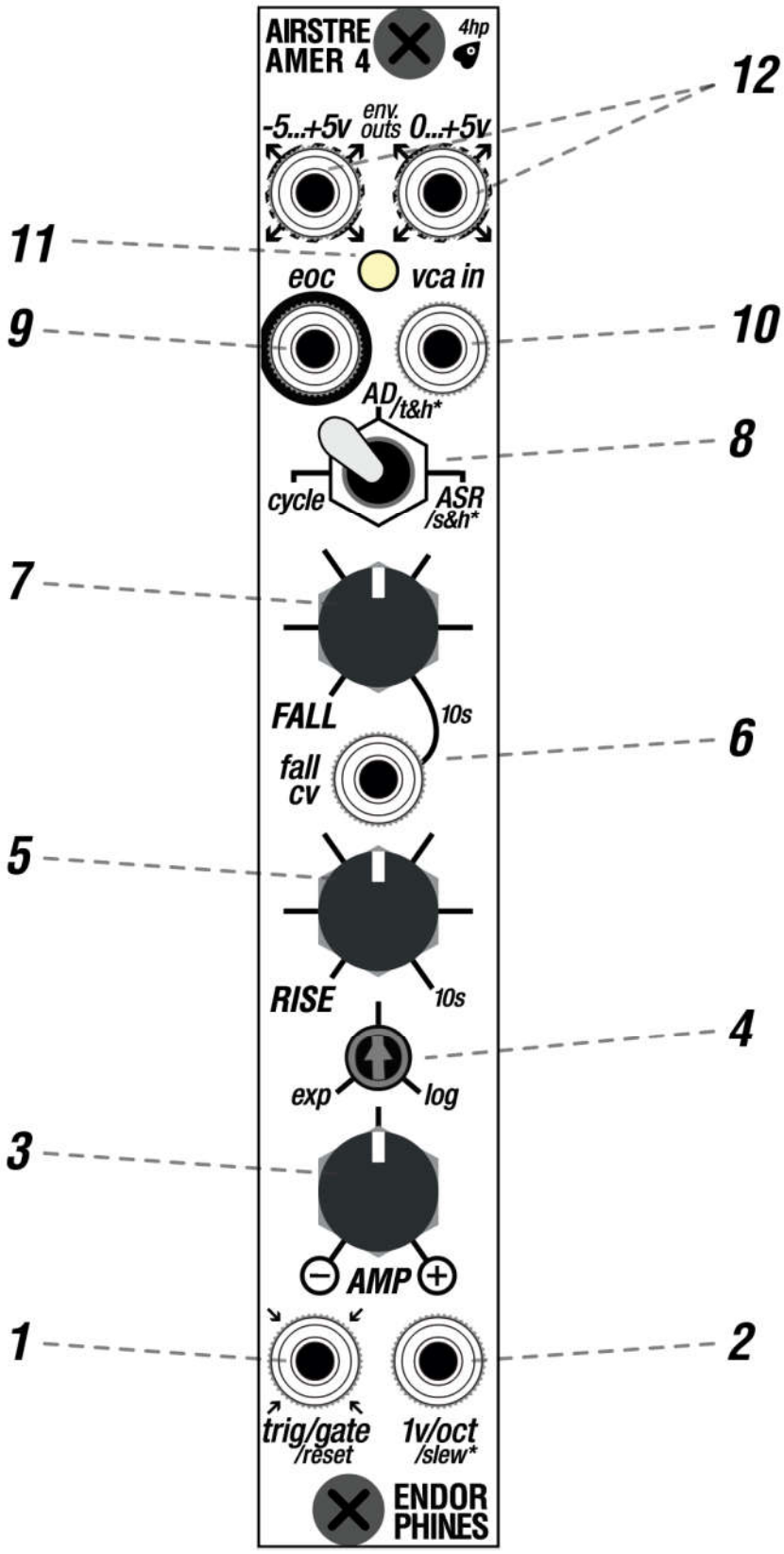
CONNECTING THE POWER

Before installing a new module in your case, ensure your power supply has a free power header and sufficient available capacity to power the module.
Connect the module directly to the power bus-board with supplied 10-16 ribbon cable like any other eurorack module. Pair of ***RED***/***BROWN*** pins on the multicolor ribbon cable corresponds to ***NEGATIVE -12 VOLTS***.
Make sure to align the power cable with the ***'RED/BROWN STRIPE'*** label on the module that corresponds to -12V, to the 10-pin connector and with typically a white line for the 16-pin connector on the bus board.

TECHNICAL SPECIFICATIONS

- Width: 4 HP/TE, depth: 25 cm / 1″ with inserted ribbon cable
- Current draw: +12V: 60 mA, -12V: 15 mA
- CV range: 0…+5V for VCA with up to -5…+5V for 1v/oct/slew input.
- Audio output: +/-5V and 0…+5V eurorack standard

INTERFACE


AIRSTRE
AMER 4
4hp
-5...+5v
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AD
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cycle
ASR
/s&h*
FALL
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RISE
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AMP
trig/gate
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1. ***TRIG / GATE / RESET JACK INPUT:*** multifunctional pulse input. Typically expected 0...+5V or 0…+10V with 0.65V threshold. Use external triggers to start the envelope in *AD* mode when (8) set in the middle. To have an additional *sustain* stage, set the envelope mode to *ASR* with (8) to the right and send a gate signal to this input: gate's duration will now control the duration of the sustain stage. When the AIRSTREAMER 4 is set to looping / cycle mode with (8) to the left, this input will act as a *HARD SYNC* input for the looping envelope, which works as an oscillator. Additionally, this input acts as a trigger for the *S&H / T&H*, allowing you to sample external CV / audio fed to the 1v/oct jack input (2) - see *SPECIAL OPERATION MODES* below.

2. ***1V/OCT JACK INPUT*** used for controlling the time of both envelope's slopes or pitch of the oscillator using external CV, typically 1v/oct signals coming from a sequencer, but not limited to only that. Additionally, you can feed it CV or audio source that will be sampled when a trigger / gate goes high on the *TRIG / GATE INPUT* (1). When no trigger / gate is present on the *TRIG / GATE INPUT*, an envelope follower is extracted from the audio sources fed to the *1V/OCT INPUT* (2).

3. ***AMP KNOB:*** polarizer / attenuverter controlling the level / polarity of the envelope / oscillator at the outputs or the result of processing external CV / audio sources. Sums with bipolar *VCA IN* jack (10).

4. ***EXP / LOG TRIMMER*** continuously defines the shape of the envelope's slopes without stretching them in time: from exponential – to linear – to logarithmic shapes. So far, generated envelope looks like: ⌒ when trimmer is at full CCW *EXP* position, ∧ in the middle noon position and ∩ at full CW *LOG* position.

5. ***RISE KNOB*** controls the length of the *RISE / ATTACK* stage of the envelope or the oscillator in the range from one millisecond to 10 seconds.

6. ***FALL KNOB*** controls the *FALL / DECAY OR RELEASE* of the envelope in the range from one millisecond to 10 seconds. Acts as attenuator when a patch cable is inserted to the *FALL CV* jack input (7).

7. ***FALL CV JACK INPUT:*** external voltage control for the *FALL / DECAY OR RELEASE* of the envelope, expects a voltage in the range of 0…5V. Normalled to +5V when no patch cable is inserted.

8. ***MODE SWITCH:*** three position switched is used it to change between:

   ➝ ***LOOPING / CYCLE*** (to the left),
   ➝ ***ATTACK-DECAY*** (in the middle) or
   ➝ ***ATTACK-SUSTAIN-RELEASE*** (to the right) modes.
   When using the *1V/OCT INPUT* jack (2) to sample external CV or audio, middle *AD* position sets the *T&H* mode, while *ASR* position sets the *S&H* mode (see *SPECIAL OPERATION MODES* below).

9. ***EOC OUTPUT JACK:*** end of cycle gate output. Outputs a high +10V signal whenever the envelope completes the full cycle or a small 10 milliseconds trigger when recycles. Stays at 0V when the envelope is generating. Conveniently, you can use that trigger output as a clock output when the envelope is cycling.
10. ***VCA INPUT JACK:*** external bipolar CV control over the amplitude of the envelope / oscillator, expecting CV in the range of 0…+5V for typical VCA action. Can be used as velocity input from external keyboard / sequencer. If a negative CV is applied to the VCA input, the envelope will be inverted therefore VCA input will essentially works as a balanced or ring modulation input. Additionally to that, unipolar 0…+5V envelope output under negative voltages will be offseted up by 5V for creating a sidechain envelope.

11. ***ENVELOPE LED:*** with the brightness shows the level / activity of the envelope.

12. ***ENVELOPE OUTPUT JACKS:*** two jacks offer separately scaled bipolar -5V…+5V and unipolar 0…+5V envelope outputs. When using AIRSTREAMER 4 as an oscillator, it is recommended to use the left bipolar output as audio sources are typically in the range of -5V…+5V. On the other hand CV sources typically expect unipolar CV sources therefore it is recommended to use right unipolar output as a CV source. Under negative voltage applied to VCA IN jack (10) or ANP knob before noon and fully CCW position that unipolar output inverted and additionally offseted, so it starts from +5V ‘rising’ to 0V and then ‘falls’ back to +5V. That allows to conveniently use it for sidechain ducking envelope. Under negative voltages bipolar envelope output simply inverted around 0V middle point: is starts at +5V ‘rising’ to -5V and then ‘falling’ back to +5V.

FEATURES OVERVIEW

At its core, AIRSTREAMER 4 is an *AD* / *ASR* envelope with a *VCA* control and looping functionality, capable of processing external CV sources by acting as a *slew limiter*, *S&H* and *T&H*.
Onboard *AMP* – polarizer knob lets you attenuate and invert the envelope on the fly, feeding negative voltages to the *VCA* input will offset the envelope up by +5V and invert it, allowing for a compact sidechain envelope solution without the need for external mixers, inverters and offset generators.
The *DECAY* / *RELEASE* time can be modulated with external CV sources and *END OF CYCLE* output can be utilized to trigger additional envelopes / sequencers / voices in your system, extending the interconnectedness of your patches.
Looping mode allows the envelope to cycle from slow *LFO* rates up to audio rates. Coupled with *1V/OCT INPUT* the envelope turns into an oscillator, level of which can also be adjusted using the built in VCA – either controlled manually or with external CV, which can be very handy when using AIRSTREAMER 4 as a *modulator* oscillator for *FM* patches.
Continuously variable shape over both slopes adjusts the curve / tonal content of the envelope / oscillator without stretching slope's duration in time, making the module easier to use in a variety of musical applications.

SPECIAL OPERATION MODES

T&H: TRACK AND HOLD

The following mode is selected by setting the *MODE SWITCH* (8) to the middle position. Feed external audio or CV source to the *1V/OCT/slew** input jack (2) and freeze them by applying the positive gate input into *TRIG/GATE* jack (1).
TRACK & HOLD mode continuously samples the external signal and once a trigger / gate goes high on the *TRIG* / *GATE* input (1), it will freeze / hold its momentary voltage level until the trigger / gate goes low again.

S&H: SAMPLE AND HOLD

The following mode is selected by flipping the *MODE SWITCH* (8) to the right. Feed external audio or CV source to the *1V/OCT/slew** input (2) and 'sample' their momentary voltage levels by applying the positive trigger or gate into *TRIG/GATE* jack (1).
Unlike *T&H* mode, *SAMPLE AND HOLD* does not continuously sample the external CV / audio source, but only starts to sample the signal once a first trigger or gate

goes high on the TRIG/GATE input jack (1) and afterwards will hold that momentary voltage after the trigger / gate goes low (opposite to *T&H*).

SLEW / ENVELOPE FOLLOWER

Feed external CV or audio source to the 1v/oct input and 'slew' them by adjusting the *RISE* (5) and *FALL* (7) knobs. Is important to use bipolar -5…+5V output to maintain the proper unity to input signal scale. It is recommended to keep the *SHAPE* trimmer (4) at 12:00, but experiment by changing its position to find the optimal slew sweet spot. CV sources will be slewed, while audio sources will be used to extract an envelope follower from audio's amplitude.

→ *Note: while 1/oct input tracks 1 volt-per-octave internal oscillator for more than 3-4 octaves, using that input for slewing external 1v/oct pitch CV source may worsen the precise tracking*

CREDITS

ENDORPHIN.ES® – AIRSTREAMER 4
FIRMWARE VERSION V.1.0
COLLECTION SPRING/SUMMER 2023

Module idea, hardware design, direction and manual by Andreas Zhukovsky

Core engine programming by BSVi

Special thanks to Xavier Galai for additional code and crazy ideas.

Manual proofreading, beta testing and demo videos by Wisdom Water

Endorphin.es are made in Barcelona, Spain

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COMPLIANCE

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes / modifications not approved by ENDORPHIN.ES (doing business as Furth Barcelona, S.L.) could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

CE

This device meets the requirements of the following standards:

EMC: 2014/30/EU

EN55032:2015 ; EN55103-2:2009 (EN55024) ; EN61000-3-2 ;

EN61000-3-3

Low Voltage: 2014/35/EU

EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011

RoHS2: 2011/65/EU

WEEE: 2012/19/EU