

ADDAC Systems — ADDAC-506 SignalFlow

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ADDAC506 VC Stochastic Function Generator & Expansion

How to use it for **melodic** patching

The ADDAC506 is primarily a **4-channel stochastic envelope / function generator**, not a dedicated oscillator or sequencer. But in Eurorack, that still makes it very useful for melody because it can generate:

- evolving control voltages
- stepped or re-randomized timing relationships
- phrase contours
- trigger structures
- layered modulation for pitch, timbre, and articulation

The attached pages describe the **main module plus expansion**, with these important functions:

- **4 independent envelope channels**
- **Randomized rise and fall times** between user-set min/max ranges
- **CV control** over all rise/fall min/max settings
- **Loop / One-shot**
- **Slew / Trigger** behavior
- **Amplitude** control: approximately **-10V to +10V**
- **Offset** control: approximately **-10V to +10V**

- **Envelope curve** from **linear to logarithmic/exponential**
- **Gate out** during rise
- **EOR** (end of rise) and **EOF** (end of fall) outputs
- **Average Mix Out**
- **Summing Mix Out**
- Expansion:
 - **Random trigger inputs** to force new randomization mid-cycle
 - **Random CV outputs** reflecting the random value used for rise or fall time

What this means musically

This module does **not directly output quantized pitch sequences**. Instead, it creates **animated control voltages** that can become melodic when sent to:

- a **VCO 1V/oct input** through an attenuator/quantizer
- a **quantizer**
- a **sample & hold**
- a **sequential switch**
- a **wavefolder/filter/resonator** to create pitch-like timbral melodies
- logic or clocking utilities for phrase generation

In practice, the ADDAC506 is best thought of as a **melody-shaping source**, not a conventional note sequencer.

Core melodic use cases

1. Use one channel as a pitch contour source

Patch:

- **ADDAC506 channel output** → **quantizer input**
- **quantizer output** → **VCO 1V/oct**
- Trigger the channel with gates or put it in **loop**

- Adjust:
- **Rise Min/Max**
- **Fall Min/Max**
- **Amplitude**
- **Offset**
- **Curve**

Result

The envelope becomes a continuously changing melodic contour. Once quantized, the slopes turn into note motion.

Tips

- Use **small amplitude** for narrow melodic ranges.
- Use **offset** to place the melody into a useful register.
- If **Rise Min > Rise Max** or similarly for Fall, the manual says it behaves as a **fixed** time control. That's useful when you want one side stable and the other stochastic.
- **Log/exp curves** can bias the melody toward lingering around some notes and moving faster through others.

2. Create 4 interrelated melodic lanes

Since there are **4 independent channels**, you can build:

- 4 voices
- 4 modulation lanes for one voice
- 3 voices plus one master phrase modulator

Patch idea:

- **Output 1** → quantizer → VCO A pitch
- **Output 2** → quantizer → VCO B pitch
- **Output 3** → filter cutoff or wavefolder depth
- **Output 4** → VCA CV or FM amount

Why it works

Even if each channel is independent, they share the same panel logic and can be set to similar or contrasting timing regions. That gives a family resemblance between voices, which often feels more musical than fully unrelated random sources.

3. Use EOR and EOF to make melodic cascades

The manual states:

- **EOR** outputs when rise ends
- **EOF** outputs when fall ends
- **Gate out** is high during rise

This makes the 506 very strong for **event chaining**.

Patch:

- **Channel 1 EOR** → trigger **Channel 2**
- **Channel 2 EOF** → trigger **Channel 3**
- **Channel 3 EOR** → trigger a **sample & hold**
- S&H output → quantizer → VCO pitch

Result

You get a phrase where melodic note changes happen at structurally meaningful points in the envelopes rather than on a strict clock.

This is excellent for: - generative melodies - rubato phrases - pseudo-counterpoint - self-evolving note timing

4. Use the expansion Random CV outputs as melodic sources

The expansion provides:

- **Random trigger inputs** for re-randomizing rise/fall values
- **Random CV outputs** that expose the CV value used for rise/fall randomization
- jumper selection between **rise random** or **fall random**

This is one of the most immediately melodic features.

Patch:

- **Random CV out** → quantizer → VCO 1V/oct
- **Random Trigger In** receives clocks, gates, or irregular triggers

Result

Every randomization event can generate a new pitch-related voltage. Because that voltage is tied to the envelope timing calculation, your **note choices and note shape/timing become correlated**.

That correlation is musically powerful: notes and articulation evolve together.

Great use

- Rise random CV controls **pitch**
- Same channel envelope output controls **VCA**
- The note and its articulation are linked

This often sounds more intentional than using unrelated random sources.

5. Build melody from the Average Mix output

The manual describes:

- **Average Mix Out** = average CV from all 4 channels
- **Summing Mix Out** = sum of all 4 outputs

Patch:

- **Average Mix Out** → quantizer → oscillator pitch

Why use average instead of sum?

Average tends to be: - smoother - more centered - less likely to jump wildly

This is useful for: - singable melodic lines - slowly evolving lead lines - modal drifting phrases

If each channel has different rise/fall ranges, the average output becomes a composite phrase made from several interacting gestural layers.

6. Use the Summing Mix output for wider melodic leaps

Patch:

- **Summing Mix Out** → attenuator → quantizer → VCO pitch

Result

The sum output is generally more energetic and volatile than the average. This is better for: - angular melodies - experimental atonal lines - dramatic interval jumps - chaotic arpeggio-like movement

Because the module can output large voltages, attenuation before the quantizer is often very important.

7. Slew mode as melodic glide processor

The manual says:

- **Slew** works for CVs, gates, and triggers
- It behaves somewhat like a **CV envelope follower**
- **Trigger** mode generates one cycle per trigger

In melodic systems, **Slew mode** can reshape incoming pitch or modulation CV.

Patch:

- external sequencer CV → **channel signal input**
- channel set to **Slew**
- channel output → quantizer or directly to VCO pitch

Uses

- smooth glides between sequenced notes
- randomized portamento behavior if rise/fall min/max are spread
- expressive pitch lag
- converting stepped random into curved melodic movement

A particularly nice patch: - sequencer CV → Slew channel - output → quantizer - quantizer → VCO

This gives a melody that keeps the broad gesture of the original sequence but gains stochastic timing and contour.

8. Trigger mode for articulated note shapes

In **Trigger** mode, each incoming trigger fires one envelope cycle.

Patch:

- clock or rhythm source → channel input
- channel output → quantizer → VCO pitch
- same trigger or gate out → envelope/VCA for audio articulation

Result

Each note can have a pitch trajectory over the duration of the triggered envelope. Depending on speed, this may sound like: - ornamentation - pitch bends - micro-phrases - plucked/struck melodic gestures

This works especially well with: - LPGs - FM voices - resonators - pinged filters

Best ways to combine the main module and expansion for melody

A. Correlated pitch + articulation patch

Patch:

- **Expansion Random Trigger In 1** ← rhythmic trigger pattern
- **Random CV Out 1** → quantizer → oscillator pitch
- **Envelope Out 1** → VCA CV
- **Gate Out 1** → envelope trigger or logic clock

Why it's good

Pitch changes happen when the rise/fall randomization changes, while the envelope controls note articulation. This creates phrases where timing, note choice, and dynamics feel related.

B. One channel per melodic function

A very effective 4-channel allocation:

- **Channel 1:** main pitch contour
- **Channel 2:** transposition amount

- **Channel 3:** timbre movement
- **Channel 4:** phrase-level amplitude or density

Patch example:

- Ch1 out → quantizer A input
- Ch2 out → attenuator → add to Ch1 before quantizer, or transpose quantizer reference
- Ch3 out → filter cutoff / fold / FM index
- Ch4 out → VCA CV or clock probability modulation

This creates melodies that breathe and transform rather than just changing notes.

C. Self-generating canon / round

Patch:

- Ch1 **EOF** → trigger Ch2
- Ch2 **EOF** → trigger Ch3
- Ch3 **EOF** → trigger Ch4
- Ch4 **EOF** → trigger Ch1

Then: - all 4 outputs → 4 quantizer channels → 4 oscillators
or - all 4 outputs mixed/selected into one pitch path

Result

A rotating network of envelopes, each with randomized rise/fall times, creates staggered melodic entries and evolving relationships. Very good for ambient, minimalism, and generative counterpoint.

D. Random CV outputs as hidden sequencer

The expansion's Random CV outputs can function like a strange sequencer lane.

Patch:

- **Random CV Out 1-4** → precision adder mixer or sequential switch
- output → quantizer → VCO pitch
- trigger the random inputs with related but not identical clocks

Result

You effectively get four stochastic pitch sources whose update timing is independently controllable. This can produce: - non-repeating melodies - polymetric note changes - phrase memory-like behavior if clocks are slow

Practical melodic patch recipes

Patch 1: Generative lead voice

You need: - ADDAC506 + expansion - quantizer - VCO - VCA - envelope or LPG - trigger source

Patch: - Random trigger source → **Expansion Random In 1 - Random CV Out 1** → quantizer → VCO 1V/oct - **Output 1** → VCA CV or filter CV - **Gate Out 1** → trigger envelope/LPG - Audio voice → VCA → output

Set: - medium speed - trigger mode - moderate rise/fall ranges - small pitch range via quantizer/attenuation

Result: A coherent generative melody where note selection and envelope behavior are connected.

Patch 2: Melodic drone with internal movement

Patch: - **Average Mix Out** → attenuator → quantizer → oscillator pitch - **Output 1** → filter cutoff - **Output 2** → wavefolder amount - **Output 3** → FM index - **Output 4** → stereo movement or reverb send CV

Set channels to loop with different random ranges.

Result: A slowly shifting drone with a pitch center that continuously evolves.

Patch 3: Pseudo-arpeggiator

Patch: - master clock → trigger Ch1 - Ch1 EOR → trigger Ch2 - Ch2 EOR → trigger Ch3 - Ch3 EOR → trigger Ch4 - Ch1-4 outputs → sequential switch CV inputs or mixer - switched/mixed result → quantizer → VCO

Result: A chain of linked contour events that acts like an arpeggiator, but with variable note lengths and spacing.

Patch 4: Humanized melody processor

Patch: - external sequencer pitch CV → channel input in **Slew** mode - channel output → quantizer → VCO pitch - expansion random trigger input receives sparse accents

Result: Your normal melody becomes organic and slightly unpredictable, with changing glide/response behavior.

Important musical behaviors from the manual

Randomization happens at cycle start

The manual specifically says the rise/fall randomization occurs **at the start of a cycle**. If you move controls during the cycle, changes are not applied until the next trigger/loop.

Musical implication

This makes phrase behavior stable within each note/event, which is good for melody. You don't get erratic mid-note parameter changes unless you use the **expansion random trigger input**.

Expansion random trigger can change timing mid-cycle

The expansion allows re-triggering the randomization **at any point in time**.

Musical implication

This is ideal for: - accents - fills - phrase mutations - occasional surprise notes or bends

Use a separate rhythm source to inject this only on selected beats.

Lock / Unlock supports focused channel editing

The manual says lock holds each channel's rise/fall settings and prevents changes, making it easier to treat channels independently.

Musical implication

You can tune one channel as a stable melodic voice while letting others remain volatile.

Amplitude and offset are crucial

Because the envelope amplitude can span approximately **-10V to +10V**, and offset also shifts overall voltage, the raw output range is too large for direct melodic use in many patches.

Recommendation

For pitch work, use: - attenuator - offset utility - quantizer - precision adder

This module becomes much more musically controllable when scaled carefully.

Strengths for melodic composition

What it excels at

- generative melody
- correlated pitch and articulation
- phrase evolution
- non-grid timing
- expressive CV contours
- ensemble-like multi-voice motion
- slow shifting tonal structures

What it is not ideal for by itself

- exact step sequencing
 - repeatable tonal basslines
 - strict 16-step melodies
 - direct scale-locked pitch output without a quantizer
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Best companion modules

To get the most melodic value from the ADDAC506, pair it with:

- **Quantizer**
Essential if you want tonal melodies.
 - **Precision adder / CV mixer**
For transposition and combining multiple channels.
 - **Sequential switch**
Great for turning the four channels into ordered melodic events.
 - **Sample & Hold / Track & Hold**
Useful for extracting stable note values from moving envelopes.
 - **Clock divider / logic**
To create interdependent phrase timing from EOR/EOF/Gate signals.
 - **Oscillator with good FM/timbre response**
The module is excellent not just for pitch but also for melodic timbral animation.
 - **Attenuators / offsets**
Very important due to the voltage range.
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Bottom line

The ADDAC506 and its expansion are best used for melody as a **stochastic phrase generator** rather than a classic sequencer. The most powerful melodic strategies are:

1. **Quantize the envelope outputs**
2. **Use the expansion Random CV outputs for pitch**
3. **Use EOR/EOF/Gate outputs to chain events**
4. **Use Average and Summing outputs for higher-level phrase contours**
5. **Correlate pitch, articulation, and timbre using the same channel**

If you patch it with a quantizer and a few utility modules, it can produce melodies that feel: - organic - self-evolving - structurally coherent - less repetitive than ordinary step sequencing

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