Moog — Mavis

- Manual PDF

Moog Mavis User Manual (PDF / product page)

Using Moog Mavis to Create Melodic Components in Music

The **Moog Mavis** is a compact semi-modular analog synth voice that can generate a surprising range of **melodic material** on its own or as part of a Eurorack system. From the manual, its key melodic building blocks are:

- **VCO** for pitch generation
- **Keyboard / KB CV / 1V-OCT** for note control
- **EG** for note articulation
- **VCF** for timbral shaping
- **VCA** for amplitude contour
- **LFO** for cyclic modulation or even second-oscillator audio use
- **Sample + Hold** for stepped voltages and pseudo-random melodies
- **Mixer / Attenuator / Mult / Wavefolder** for shaping and routing pitch and timbre control

Below is a practical analysis of how these modules work together specifically for **melodic synthesis**.

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1. Core melodic voice architecture

At its simplest, Mavis already contains a normalled melodic signal path:

Keyboard / external pitch CV → VCO → VCF → VCA → output

And for note triggering:

Keyboard / external gate → EG → VCA

This means Mavis naturally behaves like a classic monosynth voice. For melody writing, this gives you three essential layers:

1. **Pitch source**
2. Internal keyboard via **KB CV**
3. External sequencer via **1V/OCT**
4. **Note articulation**
5. Gate into **EG**
6. EG shapes note onset and duration through the **VCA**
7. **Tone shaping**
8. VCO waveform and pulse width define harmonic base
9. VCF cutoff/resonance define brightness and contour

This is the foundation for basslines, lead lines, arps, and sequenced motifs.

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2. Melodic pitch generation

A. Internal keyboard as a melodic controller

The onboard one-octave button keyboard outputs pitch through the internal routing and also via **KB CV out**.

Useful melodic behaviors from the manual:

- **KB SCALE** changes the voltage span of the keyboard
- Full CCW: one octave across low C to high C
- Full CW: five octaves across the same keys

This is unusual and musically powerful. It means the keyboard can act as:

- a normal one-octave melodic keyboard
- a **compressed pitch map** for wide melodic leaps
- an expressive CV source for transposition and interval experiments

Musical use

- Set KB SCALE low for traditional melodies
- Increase KB SCALE for larger interval jumps and wide-register riffs
- Use GLIDE to turn discrete notes into portamento phrases

B. External sequencer or Eurorack pitch CV

The **1V/OCT input** allows Mavis to be driven from any sequencer, keyboard, quantizer, or CV source.

This makes Mavis ideal as a **complete analog melodic voice** in a modular system.

Common melodic patch

- External sequencer pitch CV → **1V/OCT**
- External gate/trig → **GATE**
- Audio out from **/VCA** to mixer or interface

This gives you: - precise melodic sequences - synchronized timing - classic analog note articulation

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C. Sample + Hold as a melody generator

The **S+H** circuit is one of the most useful melodic tools in Mavis.

By default: - **VCO** is the sample source - **LFO** is the gate source

The result is a stepped voltage output at **S+H out**, which can be patched to pitch destinations like **1V/OCT**.

Why this creates melodies

When S+H samples a changing waveform, it outputs discrete voltage steps. Those steps can become pitches when sent to the oscillator pitch input.

Patch idea

- **S+H out → 1V/OCT**

Now the oscillator pitch jumps in stepped intervals. If the VCO source waveform is saw, the values vary more continuously and produce broader pitch variety.

Make it musical

Because raw S+H can be too wide or erratic: - use the **Attenuator** - use **KB CV** as a transposition source - use the **Mixer** to combine offsets and pitch voltages

This is one of the best ways to create: - generative melodies - pseudo-random riffs - Berlin-school stepping patterns - experimental lead lines

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3. Controlling melodic range and transposition

Mavis includes several utilities that are extremely useful for turning raw control voltage into musical pitch material.

A. Attenuator for pitch interval control

Patch: - **S+H out → ATTN (+5)** - **ATTN out → 1V/OCT**

Now the **ATTENUATOR** knob scales the pitch movement.

Musical result

- low attenuation = small interval melody
- high attenuation = wide leaps

This is essential for making random voltages feel more musical.

B. Mixer for pitch offsets and combining sources

The **ONE/TWO mixer** can combine voltages, not just audio. This means it can build more complex melodic CV.

Examples:

1. Add transposition offset

- Put a CV into **TWO**
- Use **ONE LVL** with nothing at ONE input for offset behavior described in the manual

This can shift a melodic line up/down.

2. Combine two melodic sources

- Sequencer CV → **TWO**
- S+H or LFO CV → **ONE**
- **ONE+TWO out → 1V/OCT**

This creates: - melody plus ornament - pitch drift - interval modulation - semi-random note variation over a structured sequence

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C. Mult for parallel melodic control

The **MULT** lets one pitch source affect several destinations at once.

Example

- **KB CV → MULT**
- **MULT 1 → 1V/OCT**
- **MULT 2 → LFO RATE**

Now the keyboard pitch also changes LFO rate. If the LFO is in audio range, this enables pitch-linked harmonic behavior. If the LFO is in low range, it gives note-dependent modulation speeds, which can make melody lines feel more animated.

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4. Articulation: turning pitches into notes

Pitch CV alone is not enough for melody. The note needs time-shaping. On Mavis, this is mainly handled by:

- **GATE**
- **EG**
- **VCA**
- optionally **VCF modulation**

A. EG to VCA = note shape

By default the envelope generator shapes the VCA. This creates note contours:

- **Attack**: slow or sharp onset
- **Decay**: fall from peak
- **Sustain**: held note level
- **Release**: tail after key/gate ends

Musical uses

- Fast attack / short decay / low sustain = pluck, sequence blip, bass stab
- Fast attack / medium decay / medium sustain = lead line
- Slow attack / long release = melodic pad-like phrasing

- Long release + glide = lyrical mono lead

B. EG to filter for melodic expressiveness

The **VCF MOD MIX** and **VCF MOD AMT** let the EG shape filter cutoff.

This is critical for melody because it makes each note dynamically “speak.”

Musical results

- positive filter EG: classic synth pluck
- negative filter EG: darker attack and opening tail
- higher resonance: vowel-like melodic articulation
- moderate envelope amount: expressive phrasing without overpowering pitch

For melodies, filter envelopes are often as important as note pitch.

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5. Using modulation to enrich melodies

A. LFO vibrato

Use the VCO modulation section: - **VCO MOD MIX toward LFO** - raise **PITCH MOD AMT**

This creates pitch modulation.

Musical result

- low amount, medium rate = vibrato
- slow rate = drifting melodic line
- fast rate = FM-like brightness or instability

For leads, subtle vibrato adds life.

B. PWM for animated melodic timbre

If using pulse wave: - set **VCO WAVE** toward pulse - raise **PWM AMT** - choose EG or LFO with **VCO MOD MIX**

This creates melodic tones that evolve over time.

Musical result

- LFO PWM = classic animated lead/pad character
- EG PWM = every note has its own timbral attack
- useful for melody lines needing movement without filter overuse

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C. Filter modulation as phrasing engine

Use: - **VCF MOD MIX** to choose EG/LFO blend - **VCF MOD AMT** to define depth and polarity

This can create: - repeating brightness pulses across a sequence - note-by-note contour - syncopated tonal motion if driven externally

A melody becomes much more compelling when timbre moves with it.

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6. LFO as a second oscillator for richer melodic voices

One of the most musically important manual examples is using the **LFO in audio rate** as a second oscillator.

Patch: - **LFO out → ONE (-5)** - **VCO out → TWO** - **ONE+TWO out → FOLD IN** - optionally **KB CV → LFO RATE**

Why this matters melodically

A second oscillator thickens a melody dramatically: - intervals - beating - richer harmonics - more presence for bass or lead lines

Without the **KB CV → LFO RATE** patch, the LFO stays at fixed pitch while the VCO tracks the keyboard. That creates drone-against-melody effects.

With **KB CV → LFO RATE**, both oscillators track together more like a classic dual-osc monosynth.

Musical applications

- fat basslines
- harmonically dense lead sounds
- metallic melodic phrases when slightly detuned
- aggressive solos when combined with wavefolder

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7. Wavefolder for melodic timbre design

Mavis is notable for including a **wavefolder**, and this can strongly affect melodic presence.

Patch: - **VCO out → FOLD IN**

Now the oscillator is routed through the folder, then onward to filter/VCA.

Musical role in melody

Wavefolding adds harmonic complexity before the filter. This is especially effective for: - cutting leads - acid-adjacent bass timbres - expressive solo voices - brighter melodic motifs that stay audible in a mix

The manual notes the folder is especially pronounced with **saw wave**.

Best melodic use

- saw wave into folder
- moderate fold amount
- filter cutoff partially open
- envelope on filter
- slight glide

This produces a very playable, vocal, aggressive monosynth lead.

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8. Sample + Hold for structured melodic variation

S+H doesn't need to be fully random. It can create **rhythmic melodic motifs** when carefully constrained.

A. Stepped pitch sequence

- **S+H out → 1V/OCT**
- LFO provides clocking
- adjust **LFO RATE**
- use **ATTENUATOR** to reduce range

Result: - a repeating but quasi-random stepped melody

B. Stepped filter melody accent

- **S+H out → CUTOFF**
- keyboard still controls pitch

Result: - stable melody pitch with evolving timbral accents

C. Parallel pitch + filter melody

- **S+H out → MULT**
- **MULT 1 → 1V/OCT**
- **MULT 2 → CUTOFF**

Result: - pitch and brightness move together - creates highly animated melodic lines with internal coherence

This is especially effective for generative music.

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9. Glide as a melodic expression tool

The **GLIDE** control affects transitions between notes.

Melodic uses

- no glide: precise sequenced lines
- short glide: legato funk bass or lead phrasing
- medium glide: classic monosynth solos
- long glide: experimental interval smears

Because glide also affects **KB CV out**, it can be part of larger patch behavior if KB CV is used elsewhere.

This makes Mavis good for: - portamento leads - acid-style slides - expressive legato phrases - animated CV interactions

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10. Patch strategies for different melodic roles

A. Bassline voice

Goal: tight, punchy low-end melody

Suggested setup: - VCO: saw or pulse - Filter: low-pass, medium cutoff - Resonance: low to medium - EG: fast attack, short decay, medium/low sustain, short release - VCF EG: moderate positive amount - Glide: very low or subtle - Optional: wavefolder lightly engaged

Patch ideas: - external sequencer → **1V/OCT**, **GATE** - **VCO out** → **FOLD IN** for extra bite - subtle **PWM** or filter LFO modulation

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B. Lead voice

Goal: expressive monophonic melody

Suggested setup: - VCO: saw/pulse blend - Pulse width adjusted for body - Filter: medium cutoff, some resonance - EG: fast attack, medium decay, medium sustain, medium release - Glide: moderate - LFO to pitch: subtle vibrato - Filter EG: moderate

Patch ideas: - **VCO out → FOLD IN** - **KB CV → MULT** - one copy to pitch path, another to LFO rate for note-dependent vibrato speed or dual oscillator tracking - audio-rate LFO mixed with VCO for thicker tone

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C. Generative melody source

Goal: self-running melodic component

Suggested patch: - **S+H out → ATTN in** - **ATTN out → 1V/OCT** - LFO as default S+H gate - VCO as default sample source - EG with medium attack/decay - VCA in EG mode - S+H optionally also to filter via MULT

Refinements: - slow LFO for sparse melodic notes - faster LFO for arpeggio-like stepping - attenuate pitch range for tonal consistency - use external quantizer downstream if desired in a bigger Eurorack system

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D. Drone-plus-melody patch

Goal: melody against a fixed internal harmonic reference

Patch: - LFO in audio range - **LFO out → ONE (-5)** - **VCO out → TWO** - **ONE+TWO → FOLD IN** - no KB CV to LFO RATE

Result: - VCO follows played notes - LFO stays fixed - creates interval beating and drone tension

This is excellent for: - modal melodies - experimental techno hooks - cinematic motifs

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E. Sequence with animated timbre

Goal: melody that evolves without changing note content

Patch: - sequencer pitch → **1V/OCT** - sequencer gate → **GATE** - **S+H out** → **CUTOFF** or LFO → CUTOFF - use EG on VCF also - pulse wave with PWM

Result: - steady melodic pattern - constantly shifting articulation and brightness - useful for minimalist and modular-style repetition

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11. Best module combinations for melody inside Mavis

Here are the most important “musician’s combinations” from the manual.

1. Keyboard + VCO + EG + VCA

The basic playable melody path.

Best for: - immediate lead/bass playing - testing melodic ideas - expressive manual performance

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2. External 1V/OCT + GATE + VCF EG

Turns Mavis into a full Eurorack melodic voice.

Best for: - sequenced basslines - modular lead voice - DAW/CV controlled melodies

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3. S+H + Attenuator + 1V/OCT

Turns Mavis into a generative pitch machine.

Best for: - random melodies - evolving motifs - self-playing patches

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4. LFO audio rate + Mixer + VCO + FOLD IN

Makes a richer two-oscillator melodic synth.

Best for: - thick leads - harmonically rich riffs - aggressive melodic material

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5. VCO + Wavefolder + Filter

Adds harmonic complexity before subtractive shaping.

Best for: - cutting melodies - expressive solo tones - modern, brash analog voices

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6. Mult + one CV source to multiple destinations

Couples pitch with timbre/modulation.

Best for: - melodies that “open up” as they rise - pitch-dependent modulation behavior - more organic phrasing

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12. Practical melodic patch recipes

Patch 1: Classic analog lead

- Use default signal path
- VCO wave between saw and pulse
- Filter cutoff around mid position
- Resonance low-medium
- EG: fast attack, medium decay, medium sustain, medium release
- VCF MOD MIX toward EG
- VCF MOD AMT positive
- slight glide
- slight LFO vibrato via VCO mod

Result: singing Moog-style mono lead

Patch 2: Acid-ish melodic bass

- saw wave
- **VCO out → FOLD IN**
- cutoff fairly low
- resonance medium-high
- EG with fast attack, short decay, low sustain, short release
- VCF EG amount fairly high
- glide short

Result: sharp, articulate melodic bassline

Patch 3: Generative stepped melody

- **S+H out → ATTN (+5)**
- **ATTN out → 1V/OCT**
- leave default S+H source/gate
- LFO rate sets melody speed
- VCO wave to saw for broader pitch values
- EG short-medium for percussive notes if externally gated, or use drone methods with filter animation

Result: autonomous modular melody source

Patch 4: Dual oscillator solo

- LFO rate to audio range
- **LFO out → ONE (-5)**
- **VCO out → TWO**
- **ONE+TWO out → FOLD IN**
- **KB CV → LFO RATE**
- tune LFO by rate knob
- shape with filter and EG

Result: fuller, more powerful melodic voice

Patch 5: Pitch + brightness linked melody

- **KB CV → MULT**
- **MULT 1 → 1V/OCT** or let internal keyboard handle pitch
- **MULT 2 → CUTOFF**

Attenuate if needed via utility rerouting.

Result: higher notes naturally get brighter, mimicking acoustic behavior

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13. What makes Mavis especially good for melody

From a Eurorack musician's perspective, Mavis is especially effective for melodic work because it combines:

- a **true analog voice**
- a **playable keyboard**
- **1V/oct and gate I/O**
- internal utility modules usually missing from small synth voices
- **wavefolder** for additional harmonic expression
- **audio-rate LFO** that doubles as second oscillator
- **sample & hold** for generative pitch material

So it can function as:

- a self-contained melodic monosynth
- a Eurorack lead/bass voice
- a generative melody module
- a modulation-rich timbre engine for repeating note patterns

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14. Final musician’s take

If your goal is to create **melodic components**, think of Mavis in three layers:

1. Pitch layer

Use: - keyboard - external 1V/oct - S+H - attenuated CV - mixed CV sources

2. Articulation layer

Use: - gate - EG - VCA - glide

3. Character layer

Use: - waveform selection - pulse width / PWM - filter envelope - resonance - wavefolder - audio-rate LFO mixing

The most musical patches usually come from combining all three layers: - **stable pitch source** - **dynamic envelope** - **moving timbre**

That’s where Mavis becomes much more than a starter synth—it becomes a very capable **melodic modular voice**.
