2hp — Comb

- Manual PDF

Manual PDF

Using the Comb module to create melodic material

Based on the manual, this is a **2hp Comb** module: an **IIR peaking comb filter** with:

- **Audio input / output**
- **FREQ** control and CV
- **RES** control and CV
- **DAMP** control and CV
- Ability to go into **self-oscillation**
- A **dampening filter in the feedback path**

That means it can work not just as a tone-shaping effect, but as a **pitched resonator**, a **self-oscillating voice**, or a **melodic exciter/filter** when paired with other Eurorack modules.

What the module does musically

A comb filter imposes a series of harmonic peaks onto incoming audio using a very short delay line. In practice, this gives you a few musically useful behaviors:

1. **Resonant pitch emphasis**
2. The **FREQ** control sets the comb's cutoff, which the manual describes as **inversely proportional to delay time**.

3. Example from the manual: **500 Hz = 2 ms delay**.
4. As you tune FREQ, the harmonic spacing changes, often producing a perceived pitch.
5. **Feedback-based ringing**
6. **RES** increases feedback in the delay line.
7. At high settings, the module can **self-oscillate**, meaning it can generate a tone on its own or sustain resonant tones from tiny transients.
8. **Brightness and decay shaping**
9. **DAMP** controls a **1-pole filter in the feedback path**.
10. More dampening = darker, more muted resonance.
11. Less dampening = brighter, more extended upper harmonics.

So in a patch, Comb is ideal for turning: - clicks into notes, - noise into strings, - simple oscillators into tuned harmonic material, - modulation into animated melodic textures.

Important module details from the manual

I/O and CV

- **IN**: audio input, **10 Vpp**
- **OUT**: audio output, **10 Vpp**
- **FREQ CV**: ±5 V
- **RES CV**: ±5 V
- **DAMP CV**: ±5 V

Controls

- **FREQ**
- Sets cutoff frequency / comb tuning
- Lower delay time = higher frequency
- **RES**

- Sets feedback amount
- Controls strength of resonant peaks
- **DAMP**
- Controls cutoff of the filter in the feedback path
- Left = darker / more damped
- Right = brighter / less damped

How to use it for melodic components

1. Turn impulses into pitched notes

This is the most direct “melodic” use of a comb filter.

Patch idea

- Send a **triggered click**, short envelope pop, or sharp transient into **IN**
- Raise **RES** until the comb rings audibly
- Tune **FREQ** to the desired pitch area
- Adjust **DAMP** to shape how bright or natural the ring sounds

Result

Each transient excites the filter like striking a string or resonant body. This creates: - plucked tones - tuned percussion - pseudo-karplus voices - melodic pings

Best companion modules

Use with: - trigger source / sequencer - envelope with very short attack/decay - VCA or transient generator - noise source for more “string” texture

Musical use

Sequence the transient source rhythmically, and use CV into **FREQ** to change the note for each step. This gives you a playable resonator voice.

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2. Use self-oscillation as a sine-like melodic voice

Since the manual states the module is **capable of self oscillation**, you can use it as a sound source.

Patch idea

- Leave **IN** unpatched or feed a tiny amount of noise/transient
- Increase **RES** until the module begins to ring or self-oscillate
- Tune **FREQ** by ear
- Use **FREQ CV** from a sequencer or quantizer

Result

You can get a pitched tone that behaves like a resonant oscillator. Depending on settings, it may be: - sine-like - hollow - metallic - unstable in a musically interesting way

Melodic role

This works well for: - lead lines - drones with pitch motion - ghost melodies - tuned feedback voices

Tip

Because comb filters are not always calibrated for precise **1V/oct** tracking, treat this as an **experimental pitched voice** unless you confirm stable scaling in your system. A quantizer before the CV input can still help create musical intervals.

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3. Karplus-Strong style plucked string patches

The manual specifically hints at “lustrous string sounds from white noise,” which is exactly where a comb filter shines.

Patch idea

- Patch **white noise** or a very short burst of noise into **IN**
- Trigger the noise with a VCA or low-pass gate
- Set **RES** fairly high
- Tune **FREQ** to the perceived note
- Use **DAMP** to control how bright or muted the string feels

Result

You get a synthetic plucked-string or harp-like voice.

How to make it melodic

- Send sequenced CV into **FREQ CV**
- Trigger one short burst per note
- Use different DAMP values per phrase for articulation

Performance angle

- Lower **DAMP** (more dark) = muted plucks
- Higher **DAMP** (brighter) = sharper, more metallic strings
- Modulating **DAMP** per note gives a very expressive melodic line

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4. Process an oscillator into harmonically animated melodies

Comb can also reshape an already-pitched oscillator into something more complex.

Patch idea

- Patch a VCO waveform into **IN**
- Sequence the VCO normally for pitch
- Use Comb after the oscillator
- Sweep or sequence **FREQ** independently
- Add modulation to **RES** or **DAMP**

Result

This creates: - phaser-like thickening at subtle settings - tuned harmonic reinforcement - metallic doubling - shifting overtone emphasis

Why this is useful melodically

The base oscillator carries the note, while Comb adds a second layer of pitch-related coloration. This can make simple sequences feel: - more animated - more acoustic - more vocal - more “played”

Strong use cases

- basslines needing edge
- leads needing shimmer
- arpeggios with moving overtones
- drones that bloom into chords of harmonics

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5. Create melodic percussion

Comb is excellent for tuned percussion because it naturally rings at a frequency related to the delay time.

Patch idea

- Feed short triggers, clicks, or filtered noise into **IN**
- Moderate to high **RES**
- Tune **FREQ** to notes in a scale

- Keep **DAMP** lower for wood-like sounds or higher for metallic sounds

Result

You can create: - tuned toms - claves - mallet tones - synthetic marimba / string-hit timbres

Musical benefit

This is especially useful if you want a rhythm track that also contributes pitch content.

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6. Use CV modulation to animate melodies

The module has CV over all three important parameters, which makes it much more than a static filter.

FREQ CV for melodic motion

Patch: - sequencer CV - quantized random - sample & hold - slow envelope - keyboard CV

Use it for: - changing notes - glides and bends - subtle detuning around a fixed center - pseudo-arpeggiation

RES CV for articulation

Patch envelopes or velocity-like CV into **RES CV**.

Use it for: - stronger resonance on accented notes - notes that bloom into feedback - dynamic contrast between dry and singing tones

DAMP CV for timbral phrasing

Patch an envelope, LFO, or sequencer lane into **DAMP CV**.

Use it for: - brighter attacks, darker tails - alternating muted/open notes - evolving harmonics over a phrase

This is especially effective for making repeating sequences feel alive.

Practical melodic patch recipes

Patch 1: Plucked string sequencer

Goal: melodic plucks

Patch - Noise source → VCA → **Comb IN** - Trigger sequencer → envelope → VCA CV - Pitch CV sequencer → **FREQ CV** - **Comb OUT** → mixer / VCA / effect

Settings - **RES**: high but below runaway oscillation - **DAMP**: middle to high - **FREQ**: set to a useful note range

Sound - Harp-like - Koto-like - Synthetic string plucks

Patch 2: Self-oscillating lead

Goal: use Comb as a voice

Patch - Minimal excitation or none at input - Raise **RES** until self-oscillation starts - Sequencer / quantizer CV → **FREQ CV** - Optional envelope or VCA after output

Settings - **RES**: very high - **DAMP**: to taste - **FREQ**: tuned by ear

Sound - Hollow sine-ish lead - Fragile resonant melody - Feedback flute / wire tone

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Patch 3: Tuned percussion line

Goal: rhythm and melody at once

Patch - Trigger pulse or click source → **IN** - Sequencer CV → **FREQ CV** - Accent envelope → **RES CV** - Output → reverb

Settings - **RES**: medium-high - **DAMP**: lower for darker percussion, higher for metallic ringing

Sound - Tuned pings - Bellish percussion - Resonant hits that imply a melody

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Patch 4: Harmonic enhancer for a bassline

Goal: enrich a simple mono sequence

Patch - VCO → **Comb IN** - Pitch sequencer → VCO - Slow LFO or secondary sequencer → **FREQ CV** - Envelope or accent CV → **DAMP CV**

Settings - **RES**: low to medium for subtlety - **DAMP**: medium - **FREQ**: tuned to support the bass register

Sound - Thicker bass - Moving harmonics - Phaser/physical resonance hybrid

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Patch 5: Noise-to-melody texture

Goal: convert noise into playable pitched texture

Patch - White noise → **IN** - Quantized CV → **FREQ CV** - Slow modulation → **DAMP CV** - Gate-controlled VCA before or after Comb

Settings - **RES**: high - **DAMP**: experiment from dark to bright

Sound - Bowed/string-cloud textures - Shimmering melodic beds - Atmospheric tonal textures

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How it fits in a larger melodic Eurorack system

Comb works especially well in these roles:

As a voice

If pushed into self-oscillation or excited by transients, it can become: - a lead - a pluck voice - a tuned drone

As a resonator

Placed after: - noise - impulses - short envelopes - percussive clicks

…it becomes a melodic resonant body.

As a harmonic processor

Placed after an oscillator, sampler, or drum voice, it adds: - pitch-focused coloration - ringing overtone structures - animated resonance

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Strengths for melody

From the manual, the most important melodic strengths are:

- **Self oscillation** means it can generate tones
- **FREQ CV** means you can sequence or modulate its pitch center
- **RES CV** means you can shape note intensity and sustain
- **DAMP CV** means you can articulate timbre over time
- **Feedback path filtering** makes it more expressive and acoustic-feeling than a plain static comb

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Limitations and expectations

A few practical points:

- The manual does **not** specify precision pitch tracking, so don't assume perfect oscillator behavior.
- It may work best for:
- tuned-by-ear melodic lines
- quantized approximate pitches
- resonant/acoustic melodic parts
- experimental tonal textures
- For very controlled tonal music, pair it with:
- a quantizer
- attenuator/offset on pitch CV
- stable transient source
- VCA for note articulation

Best "used together" scenarios

Since only one module manual is attached here, I can only analyze **Comb** directly. But in a typical melodic Eurorack setup, this module works especially well together with:

- **Sequencer** → for pitch changes into FREQ CV
- **Quantizer** → to constrain comb tuning to scales
- **Noise source** → to excite string-like resonances
- **Trigger / gate source** → to create note events
- **Envelope + VCA** → to shape excitation and output dynamics
- **LFO / random CV** → for evolving harmonic movement
- **Reverb / delay** → to turn resonant plucks into lush melodic atmospheres

If you upload the other module manuals too, I can give you a much more specific **module-by-module combined patching guide** for creating basslines, leads, plucks, drones, arps, and chord-like textures from the whole set.

Quick takeaway

The **2hp Comb** is very effective for melodic work when used as:

- a **pitched resonator** for triggers/noise
- a **self-oscillating voice**
- a **Karplus-style plucked string generator**
- a **harmonic enhancer** for existing melodic lines

For melody, the key move is:
excite it with short sounds, tune with FREQ, sustain with RES, and shape brightness/decay with DAMP.
