

# 2hp – 3 to 1

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## Manual PDF

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This manual covers the **2hp 3:1**.

### What this module does musically

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The **3:1** is not a pitch generator by itself. It is a **voltage-controlled gate/trigger router and combiner**. That means its role in melodic patching is to decide:

- **which rhythmic source is allowed through**
- **when a melodic event happens**
- **how multiple rhythmic layers are combined**
- **how selection changes over time via CV**

So in a melodic system, the 3:1 is best understood as a **melody animator**, not a melody source. It helps create melodic components by shaping **when notes occur, which sequence is heard, and how phrasing evolves**.

### Key functions from the manual

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- **3 inputs** for gates/triggers: **IN 1, IN 2, IN 3**
- **1 output: OUT**
- **Voltage-controlled selection** via:
  - **SEL knob**
  - **SEL CV** input, 0–5V, added to the knob position
- **Two modes**
- **Switch mode**: routes the currently selected input to the output

- **Sum mode:** combines selected inputs and outputs **5 ms triggers** regardless of input gate length

## Why that matters for melody

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Melody in modular is usually a combination of:

1. **Pitch CV**
2. **Timing / gates**
3. **Articulation**
4. **Variation over time**

The 3:1 directly affects items 2–4.

If you pair it with: - a sequencer, - a quantizer, - a sample-and-hold, - an envelope/VCA/voice, - or multiple clock/gate sources,

then the 3:1 becomes a very useful tool for building **musical phrasing and note selection logic**.

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## Best ways to use the 3:1 for melodic components

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### 1. Switching between different melodic rhythms

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Patch: - **IN 1** = simple clock (quarter notes) - **IN 2** = divided clock (half notes or dotted rhythm) - **IN 3** = more active trigger pattern - **OUT** = sequencer advance, quantizer trigger, envelope gate, or voice trigger - **SEL CV** = slow LFO, stepped random, or another sequencer row

#### Result

Your pitch source stays the same, but **the rhythm that triggers notes changes over time**. This creates: - phrase variation - call-and-response structures - evolving melodic density

## Musical use

A simple 8-step melody can feel much more alive if the trigger rhythm changes every bar or every few beats.

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## 2. Switching between multiple sequencers or pitch-event lanes

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Even though the 3:1 switches **gates**, that still helps when running several melodic sources in parallel.

Patch: - Sequencer A pitch CV -> oscillator pitch - Sequencer B pitch CV -> precision adder/switch/mixer path - Sequencer C pitch CV -> another melodic lane - Their corresponding gate outputs -> **IN 1, IN 2, IN 3 - OUT** -> envelope or LPG trigger - Use the same selection logic elsewhere in the patch to decide which pitch lane is active

## Result

The 3:1 can act as the **rhythmic selector** that determines which melodic lane is currently articulated.

This is especially effective if: - only one pitch source is active at a time, - or each gate source corresponds to a different register, transposition, or voice.

## Musical use

You can create the impression of one melody “changing personality” by switching among: - sparse bass notes - midrange motif - high accent notes

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## 3. Creating melody from one pitch source plus three trigger logics

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A common modular trick: - one pitch CV source generates note values - triggers determine **which notes are actually heard**

Patch: - Random stepped CV or sequencer pitch -> quantizer -> oscillator pitch - **IN 1** = regular clock - **IN 2** = Euclidean rhythm - **IN 3** = manual gate / burst / irregular trigger source - **OUT** = sample-and-hold clock, quantizer trigger, or envelope trigger

## Result

The 3:1 chooses how the pitch stream is articulated. The same stored pitch material produces very different melodies depending on trigger selection.

## Why this is strong

In modular, changing trigger structure often changes perceived melody as much as changing notes.

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## 4. Voltage-controlled phrase morphing

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Because **SEL CV** accepts 0–5V and is added to the knob position, you can automate which input is selected.

Patch: - **IN 1** = rhythm for verse - **IN 2** = rhythm for variation - **IN 3** = dense fill pattern - Slow modulation into **SEL CV** - **OUT** -> melodic voice envelope

## Result

The patch slowly drifts between different melodic articulations.

## Good modulation sources

- slow triangle LFO
- stepped random
- sequencer CV row
- envelope from another voice
- keyboard/mod wheel CV

## Musical use

This gives you: - phrasing changes - section transitions - fills and emphasis without repatching

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## 5. Gate summing mode for richer melodic trigger generation

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In **sum mode**, multiple selected channels are combined and the output becomes **5 ms triggers**.

This is very useful for melodic patching because many pitch devices prefer short triggers: - sample & hold - sequencers with step advance - quantizers with trigger input - envelope generators for plucky notes

Patch: - **IN 1** = base clock - **IN 2** = off-beat syncopation - **IN 3** = ratchet or accent trigger - Set module to **sum mode** - Use **SEL/SEL CV** to determine how many sources are active - **OUT** -> sample-and-hold clock, envelope trigger, or sequencer advance

## Result

As selection increases, your melody becomes more active because additional trigger streams are included.

## Manual behavior that matters

In sum mode: - far left = **IN 1 selected** - far right = **IN 1 + IN 2 + IN 3 selected**

So the knob/CV can act like a **density control** for note events.

## Musical use

This is one of the strongest melodic applications of the module: - low selector setting = sparse melody - medium = more notes - high = energetic fills and ornamentation

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## 6. Turning long gates into short melodic triggers

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The manual notes that in **sum mode**, the output emits **5 ms trigger signals regardless of input pulse width**.

That means you can feed it long gates from: - keyboard gate - sequencer gate - clock divisions with long pulse widths

and get short, clean triggers out.

### Why this helps melody

Short triggers are often better for: - plucked envelopes - precise sample-and-hold updates - advancing sequencers cleanly - clocking quantized random voltages

### Patch idea

- Long gates from three phrase sources into IN 1–3
- Sum mode
- OUT clocks a sample-and-hold that samples a changing CV
- Quantizer after sample-and-hold
- Quantized output to oscillator

### Result

The 3:1 becomes a **melodic event conditioner**, converting broad gate structures into crisp note triggers.

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## 7. Building melodic fills and accents

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Patch: - **IN 1** = main melody trigger stream - **IN 2** = occasional fill triggers - **IN 3** = manually tapped gate button or burst generator - **OUT** = envelope trigger for lead voice

Use: - **switch mode** for hard switching between normal phrase and fill phrase - **sum mode** for layering fills on top of the main phrase

## Result

You can generate: - temporary melodic embellishments - phrase endings - accent clusters - dynamic lead variations

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## 8. Using the 3:1 to control when a sequencer advances

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Instead of sending OUT directly to a voice, use it to **clock a sequencer** or **advance a shift register**.

Patch: - **OUT** -> sequencer clock in - Sequencer CV out -> quantizer/oscillator - IN 1-3 fed by different clocks/rhythms

## Result

The module determines not just when notes fire, but **when the melody itself moves to the next pitch**.

This can create: - held notes - rushed notes - syncopated advancement - structural rhythmic variation in the melodic line

## Especially useful with

- 8-step sequencers
  - Turing machine style modules
  - shift registers
  - sample-and-hold melodic patches
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## 9. Creating call-and-response melodic structures

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Patch: - **IN 1** = sparse trigger pattern for phrase A - **IN 2** = contrasting trigger pattern for phrase B - **IN 3** = denser trigger pattern for answer/fill - **OUT** = melodic voice trigger - **SEL CV** driven by a slower sequence or manual performance gesture

### Result

The same pitch source can sound like it's speaking in alternating phrases.

This is a very musical use because melody is often more about **phrasing** than raw note content.

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## 10. Manual performance control over melody density and phrase choice

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The **SEL knob** is performable.

### In switch mode

You can manually choose which rhythmic pattern drives the melody.

### In sum mode

You can manually increase the number of active trigger sources, effectively opening up note density.

This makes the 3:1 a strong **live performance utility** for melodic sets: - select sparse rhythm for breakdown - switch to syncopated pattern for groove - add combined triggers for climax

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# Important constraints from the manual

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A few practical points:

- Inputs are for **gate/trigger signals**, threshold **2.5V**
- **SEL CV** range is **0–5V**
- **OUT** range is **0–5V**
- In **switch mode**, OUT mirrors the selected input
- In **sum mode**, OUT emits **5 ms triggers**
- The module does **not** process pitch CV directly

So if your goal is melodic content, you'll want to pair the 3:1 with at least one of these: - sequencer - quantizer - random voltage source - sample-and-hold - oscillator + envelope/VCA - clock divider / logic / trigger sequencer

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## Three especially musical patch recipes

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### Patch 1: Evolving quantized random melody

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- Noise/random CV -> sample-and-hold input
- **3:1 OUT** -> sample-and-hold clock
- Sample-and-hold -> quantizer -> oscillator pitch
- IN 1 = steady clock
- IN 2 = swung or divided rhythm
- IN 3 = burst/irregular trigger
- SEL CV = slow random or LFO

#### What happens

The 3:1 changes when new notes are sampled, creating an evolving melody with shifting rhythmic character.

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## Patch 2: One sequencer, many phrases

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- Sequencer pitch out -> oscillator
- IN 1 = basic step clock
- IN 2 = syncopated trigger pattern
- IN 3 = fill trigger pattern
- OUT = envelope trigger or sequencer advance
- MODE = switch mode

### What happens

The same note sequence gets rephrased in multiple ways, which sounds like variations on a melodic theme.

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## Patch 3: Density-controlled arpeggio generator

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- Arpeggiator/sequencer pitch -> oscillator
- IN 1 = quarter-note trigger
- IN 2 = eighth-note trigger
- IN 3 = ratchet/accent trigger
- MODE = sum mode
- SEL CV = envelope, slider, or sequencer row
- OUT = envelope trigger

### What happens

As selection rises, the arpeggio becomes denser and more energetic, ideal for builds and transitions.

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## Bottom line

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The **2hp 3:1** is best used for melody as a **trigger architecture tool**:

- it selects between rhythmic sources,

- combines them for note density,
- converts gates to short triggers in sum mode,
- and allows CV-controlled phrase changes.

By itself it doesn't generate notes, but in a melodic Eurorack patch it can be central to: - note timing, - phrase switching, - melodic density, - variation, - and live performance control.

If you want, I can also turn this into: 1. a **beginner-friendly patch guide**,  
2. a **generative melody patch recipe list**, or  
3. a **"how to use with common module types" compatibility guide**.

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