2hp — Rnd

- Manual PDF

Manual PDF

Using 2hp Rnd to Create Melodic Components

The attached manual is for the **2hp Rnd**, a compact random voltage and random gate generator. Even though it is a single module, it can contribute a lot to melodic patching when paired with common Eurorack building blocks like quantizers, VCOs, envelopes, VCAs, clock sources, and sequencers.

What Rnd does musically

Rnd provides three main outputs/functions:

- **Quant Output**: stepped random voltage, changing on each clock pulse
- **Smooth Output**: continuously moving random voltage
- **Gate Output**:
- internal clock mode: steady clock output
- external clock mode: random gates

This makes it useful for generating:

- random melodies
- evolving pitch modulation
- rhythmic note triggering
- probabilistic variation in phrases

Important behaviors from the manual

1. Internal vs External clock

The **INT/EXT switch** changes the module's behavior:

- **Internal**
- the module runs from its own clock
- **Rate knob** sets internal clock speed
- **Clock jack** becomes CV control for internal rate
- **Gate out** sends a steady 50% duty cycle clock
- **External**
- **Clock jack** becomes a clock input
- **Quant output** updates on incoming clock pulses
- **Gate out** emits random gates
- **Rate knob** controls the probability / rate behavior of those random gates
- **Smooth output** still changes at a speed determined by the Rate knob

2. Two independent random voltages

The manual states the **quantized and smooth outputs are completely independent**. That is very useful musically, because one can drive pitch while the other shapes timbre, transposition, or articulation.

3. Output range

Both random voltage paths have attenuators and can be adjusted from **0V to 10V**. That wide range is important, because for melodic use you will often want to reduce the range before sending it to a pitch input or quantizer.

Best melodic uses

1. Random melody source into a quantizer

The most direct melodic patch:

Patch - Rnd **Quant Output** → external **quantizer** input - Quantizer output → VCO **1V/oct** - Rnd **Gate Output** or another clock/gate source → envelope → VCA

Why it works - The Quant Output generates a new stepped random voltage on each clock pulse - A quantizer forces those random voltages onto a scale - Result: random but musical notes

Tip Since Rnd can output up to 10V, use the **Quant attenuator** to limit melodic range before the quantizer. Lower settings give tighter, more phrase-like melodies.

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2. Use internal clock for self-running melodies

Because Rnd has its own internal clock, it can act like a self-contained melodic idea generator.

Patch - Set switch to **INT** - Rnd **Quant Output** → quantizer → oscillator pitch - Rnd **Gate Output** → envelope trigger - Envelope → VCA / LPG

Musical result - The module clocks itself - Every internal pulse creates a new pitch - The gate output provides matching rhythmic triggers

This is great for: - generative ambient lines - aleatoric sequences - quick self-playing patches

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3. Use external clock to lock randomness to your track

For more musical control, clock it from your system master clock, trigger sequencer, or clock divider.

Patch - Master clock / sequencer clock → Rnd **Clock Input** - Set switch to **EXT** - Rnd **Quant Output** → quantizer → VCO pitch - Rnd **Gate Output** → envelope trigger or logic module

Why this is useful - Notes now change in sync with the rest of your patch - Random gates add variation without drifting out of time - Great for techno, IDM, generative pop, and modular rhythm structures

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Melodic patch ideas

Patch 1: Simple generative lead

Modules needed - Rnd - quantizer - VCO - envelope - VCA - filter optional

Patch - Rnd Quant Out → quantizer in - Quantizer out → VCO 1V/oct - Rnd Gate Out → envelope gate in - Envelope out → VCA CV - VCO out → VCA in → mixer/output

How to play it - In **INT mode**, use the **Rate knob** to choose melody speed - Adjust **Quant attenuator** for note range - Select a quantizer scale like minor pentatonic for always-pleasant results

Result A fully autonomous random melody voice.

Patch 2: Evolving melody with drifting transposition

Use both outputs together.

Patch - Rnd **Quant Out** → quantizer → VCO pitch - Rnd **Smooth Out** → attenuator/offset module → add to quantizer transpose input or oscillator FM very lightly - Clock externally or internally

Musical result - Quant Out creates note changes - Smooth Out slowly bends or transposes the melodic center - Feels like the melody is wandering through different tonal zones

This is one of the best uses of Rnd because the two random algorithms are independent.

Patch 3: Random melody plus probabilistic rhythm

In **EXT mode**, the Gate output becomes random.

Patch - Master clock → Rnd Clock In - Rnd Quant Out → quantizer → oscillator pitch - Rnd Gate Out → envelope trigger - Optional: mult the master clock to another voice for comparison

Musical result - Pitches update with the clock - Notes only sound when random gates fire - Creates rests and syncopation automatically

This is excellent for making melodies less rigid.

Patch 4: Use Smooth output as a melodic source through a sample & hold or quantizer

Although Smooth is continuous, you can still make it melodic.

Option A - Rnd Smooth Out → quantizer → oscillator pitch

This gives constantly shifting pitch, but may glide unpredictably depending on the quantizer behavior.

Option B - Rnd Smooth Out → sample and hold input - Clock source → sample and hold trigger - Sample and hold out → quantizer → oscillator pitch

Result - Smooth becomes a slowly evolving source from which discrete notes are sampled - This often sounds more “composed” than pure stepped randomness

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Patch 5: Call-and-response with two voices

If you have two oscillators or two voices:

Voice A - Rnd Quant Out → quantizer → VCO A pitch

Voice B - Rnd Smooth Out → another quantizer or sample/hold/quantizer chain → VCO B pitch

Rhythm - Use Rnd Gate Out for one voice - Use a regular clock or divided clock for the other

Result One voice sounds stepped and phrase-like, while the other sounds more fluid and unstable. Together they create a layered melodic texture.

Practical musical strategies

Constrain the voltage range

Because Rnd outputs **0–10V**, raw output can span a huge pitch range. For melody, that often means too many octaves.

Use the onboard attenuators to: - keep melodies within 1–2 octaves - reduce wild jumps - make phrases feel intentional

This is probably the single most important technique when using Rnd melodically.

Add a quantizer if you want tonal results

The manual calls one output “Quant,” but from the description it means **stepped random voltage**, not necessarily scale-quantized to musical notes. If you want melodies in key, use an external quantizer.

Use external clock for arrangement-friendly melodies

If you want the random melody to sit inside a song structure: - drive Rnd from Pamela’s, a sequencer clock, Tempi, etc. - use clock divisions for slower pitch changes - reset other modules around it for repeatable larger structures

Pair smooth and stepped outputs

A very strong melodic workflow is: - **Quant output** = note selection - **Smooth output** = timbre, transpose, filter cutoff, wavefold amount, FM depth, or vibrato depth

That keeps the melody coherent while giving it motion.

Example complete melodic system roles

Rnd as a melody generator

- Quant Out provides note CV
- Gate Out provides note triggers
- Internal clock makes it autonomous

Rnd as a variation generator for a sequencer

- Main sequencer handles core melody
- Rnd Smooth or Quant modulates:
- transpose input
- sequence direction probability
- quantizer root note
- VCO timbre

Rnd as a probabilistic ornament source

- Main melody comes from a sequencer
- Rnd Gate Out in **EXT mode** creates occasional extra triggers
- Rnd Quant Out feeds a second oscillator for fills or ornament notes

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Strengths of Rnd for melodic patching

- Very small footprint: **2HP**
- Can operate as a self-running melody seed
- Can sync to external clocks
- Independent smooth and stepped random voltages
- Built-in gate output supports note articulation
- Wide voltage range allows both broad and tightly constrained melodic motion

Limitations to be aware of

- It is not a full sequencer
- It does not store repeatable note patterns
- For tonal music, you will usually want an **external quantizer**
- For refined melodic phrasing, additional utilities help a lot:

- attenuators
- offsets
- sample & hold
- logic
- sequential switches
- clock dividers

Best pairings for melodic use

Rnd works especially well with:

- **Quantizer**: turns random voltages into scales
- **VCO / voice module**: receives pitch CV
- **Envelope + VCA/LPG**: shapes notes from gate output
- **Clock divider/multiplier**: changes melodic pacing
- **Sample & hold**: turns smooth motion into stepped notes
- **Sequential switch**: alternate between random and programmed melodies
- **Mixer/offset utility**: tame voltage ranges and transpose

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Summary

The **2hp Rnd** is best thought of as a compact melodic unpredictability source. Its **Quant Output** is ideal for stepped note generation, its **Smooth Output** is perfect for slow melodic drift or expressive modulation, and its **Gate Output** can provide either a regular pulse or random rhythmic articulation depending on clock mode.

For melodic music, the most effective setup is:

1. **Quant Out → quantizer → oscillator pitch**
2. **Gate Out → envelope trigger**
3. **Smooth Out → timbre or transpose modulation**

That patch gives you an evolving, musical, and controllable generative voice.

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