Moog — Subharmonicon

- Manual PDF

Moog Subharmonicon User Manual PDF

Using Moog Subharmonicon for Hyper-Complex Percussion & Polyrhythmic Sequences

The **Moog Subharmonicon** is an analog polyrhythmic semi-modular synthesizer, exceptionally suited for rhythmic and percussive complexity thanks to its unique sequencer, polyrhythm, and subharmonic oscillator architecture. Let's break down how you, as a Eurorack user, can harness its power for maximal rhythmic density and percussive punch.

Core Features for Rhythmic Complexity

1. Four Integer-Based Rhythm Generators
- Each divides the master clock by an integer (1–16); assignments are highly flexible.
- Any combination of rhythm generators can trigger either/both sequencers. - Mix multiple divisions (e.g., 3, 5, 7, 11, 13) for intricate, non-repeating polyrhythms.

2. Two 4-Step Sequencers (Per VCO group/voice)
- Each sequencer independently controls pitch or subharmonic divisor assignments, or both.
- Steps can be set to micro/macro-tuning ranges–great for pitched percussion!
- Use with Quantize OFF for microtonal/atonal percussion, or ON for striking melodic clanging rhythms.

3. Subharmonic Undertone Oscillators
- Two per VCO: allows each step, via sequencers, to shift both main pitch and subharmonic divisors.
- This yields metallic, bell-ish, or “prepared percussion” timbres with shifting, stacked undertones.

4. Full Patchbay Integration
- 32 patch points: CV/gate sequencers, clock in/out, triggers, EGs, VCO modulation, etc. - Patch to and from other Eurorack modules for clock manipulation, external envelope shaping, further modulation, and audio/CV mangling. - Patch SEQ 1/2 CLK outputs, or even TRIGGER outputs, for polyrhythmic trigger streams—perfect for drum voices or modulation.

Techniques for Dense, Percussive, and Unique Patterns

Polyrhythmic Generative Patching

- Assign each rhythm generator to different sequencers, and stack multiple rhythm triggers onto one sequencer.
- Use uneven rhythm divisions (e.g., Rhythm 1 = 3, Rhythm 2 = 4, Rhythm 3 = 5, Rhythm 4 = 7) and combine them, then reset the sequence to bring things back into phase.
- Use the RESET and PLAY patch points to externally retrigger or stutter sequences from an external controller for maximal complexity.

Percussive Voice Sculpting

- Use sawtooth wave for snappy, brassy percussion; square with PWM modulated by sub-osc outputs (patchbay) for woody or bell-like clangs.
- Crank mixer levels to hit the Moog filter for added distortion, emphasizing punches and transient bite.
- Use the VCF’s EG amount bi-directionally: apply both positive and negative envelopes for unique attack/decay behavior, or to generate “reverse” percussive sweeps by using negative amounts.

- Patch in external envelopes or function generators (from Maths, Batumi, Zadar, etc.) to VCA/VCF inputs for custom punch/envelope shapes.

Pattern Complexity & Microtiming

- Patch the SEQ 1 CLK out to external modules (e.g. clock dividers or logic) and feed those back in via the Rhythm Generator CV ins for clock-logic feedback and emergent patterns.
- Modulate the Rhythm Generator CV ins with random sources, LFOs, or even another sequencer for constantly shifting, non-repeating drum patterns.
- Clock Subharmonicon from external sources with non-4/4 PPQN divisions for off-grid "broken" time signatures.
- Use the filter's resonance at self-oscillation, and modulate pitch with sequencers for percussive, tomb-like hits, FM clangs, or accidental glass/bottle sounds.

Layering & Polyphony

- Use both VCO sections and their associated subharmonics to create layered percussion: "kick" from one, "snare" from subharmonics, etc.
- Cross-patch SEQ 1 output to VCO 2 or vice versa for "cross-sequencing"—one sequence modulates pitch/subharmonic assignments of the other.
- Patch VCO outputs or sub outputs as percussive audio-rate modulators into other modules for AM/FM percussion in your larger system.

Making It Stand Out in a Mix

- Use sharp, short EGs and plenty of filter resonance for snap, but play with long attack for "swelling" percussion layers.
- Add external effects via the patchbay (VCAs, distortion, waveshapers).

- Mult the TRIGGER out to fire other percussion modules, layering polyrhythmic patterns for density using a single shared clock.

Further Reading

- Moog Subharmonicon User Manual PDF

Example Patch Concepts

Algorithmic Drum Cluster

1. Patch all RHYTHM outputs in “odd” divisions to SEQ 1 (for kick) and SEQ 2 (for snare/perc), each with different rates.
2. Quantize sequences to 8-JI for pure intervals—increase step voltages randomly for microtiming.
3. Use patched VCA CV in from an external envelope for snappy transients.
4. Use subharmonic oscillators detuned for metallic “stacking.”

Dense Trigger Grid

- Patch SEQ CLK outs to a logic module (AND/OR/XOR) and feed results to TRIGGER ins on percussion voices or envelopes for ultra-dense, non-linear drum landscapes.

For deeper custom patching, inspect the complete Moog Subharmonicon User Manual PDF.

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