Moog — Labyrinth

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Moog Labyrinth Eurorack Module Cheat Sheet

OVERVIEW

Moog Labyrinth is a semi-modular, parallel generative analog synthesizer with dual sequencers, two parallel audio paths (VC wavefolder & state-variable filter), individual VCAs, dual decay envelopes, extensive patching, and advanced generative sequencing features.

Quickstart

1. **Power Up**: Plug in the +12 VDC power supply (draws ~290 mA in Eurorack), or use included wall adapter.
2. **Audio Out**: Patch the rear AUDIO OUT (1/4" TS) to a mixer or active speaker. Use the VOLUME knob to adjust.
3. **Warm Up**: Allow a few minutes for analog tuning stability.
4. **Initialize**: Hold `BUFFER + RESET` for 1 sec to clear sequencers.
5. **Sequencer**: Enable steps with `BIT FLIP`. Use `RUN/STOP` to start and hear sound. Adjust pattern using LENGTH, BIT SHIFT, CV RANGE, and CORRUPT knobs.

6. **Sound Shaping**: Wavefolder (VCW) and filter (VCF) paths are mixed/crossfaded via BLEND.
   Set ORDER:
7. PARALLEL: VCW and VCF run side by side
8. VCW>VCF: VCW feeds into VCF
9. VCF>VCW: VCF feeds into VCW

Controls Summary

Oscillators

Knob/Button	Function
VCO FREQUENCY	Main sine VCO pitch (~20 Hz - ~5 kHz)
VCO EG1 AMT	Bipolar env (EG1) to VCO pitch
VCO SEQ1 AMT	SEQ1 amount (set to QTZ for quantized)
MOD VCO FREQUENCY	Mod/triangle VCO pitch (LFO–~1.3kHz, below audio range = LFO/Drums)
MOD VCO EG1 AMT	Bipolar env (EG1) to MOD VCO
MOD VCO SEQ2 AMT	SEQ2 amount (set to QTZ for quantized)
MOD VCO FM AMT	Amount of FM from MOD VCO to VCO (thru-zero for proper tuning)

Mixer Section

Knob	Function
VCO LVL	Sine VCO level (+ overdrives past 12:00)

Knob	Function
RING MOD LVL	Ring mod level (adds metallic tones)
MOD VCO LVL	MOD VCO level
NOISE LVL	Noise level
NOISE TONE	Noise HF/LF tilt

Wavefolder (VCW) Section

Knob	Function
VCW FOLD	Depth of wavefolding (clean left, max right)
VCW EG1/CV AMT	Bipolar env or CV to VCW FOLD (patch breaks EG1 norm)
VCW SEQ1 AMT	SEQ1 amount to VCW FOLD
VCW BIAS	DC bias (for asymm. folding)

Filter (VCF) Section

Knob	Function
VCF CUTOFF	Filter cutoff frequency (~20 Hz - 20 kHz)
VCF EG1/CV AMT	Bipolar env or CV to cutoff (patch breaks)
VCF SEQ2 AMT	SEQ2 amount to VCF cutoff
RESONANCE	Adds peak at cutoff (no bass loss)
FILTER MODE	LP↔BP crossfade left→right

Blending/VCAs

Control	Function
BLEND	Crossfades VCW ↔ VCF paths
VOLUME	Final output and VCA out patch bay level
ORDER	Routing: PARALLEL/VCW-VCF/VCF-VCW
U MIX 1 LVL	Level for utility submixer 1 (normalled to ringmod, patch breaks)

Envelopes

Knob/Button	Function
EG1 DECAY	Percussive envelope 1 decay (mod, VCO, VCF, VCW)
EG2 DECAY	Envelope 2 decay (controls both built-in VCAs by default)
EG TRIG MIX	Trig blend between SEQ1 and SEQ2 triggers to envs
TRIGGER (btn)	Manually triggers both EG1 and EG2

Sequencer (per SEQ1, SEQ2)

Knob/Button	Function
RUN/STOP	Start/stop sequencer
BUFFER	Save buffer state (hold 1s for save, short press to reload)
CHAIN SEQ	Chain SEQ1 & SEQ2 for 16-step sequence

Knob/Button	Function
ADVANCE	Move play/write heads ahead one bit
LENGTH	Sequence step length (1–8, cycles)
BIT SHIFT	Rotates active bits
BIT FLIP	Flips current write head's bit on/off (generates random voltage)
CORRUPT	Probabilistic mutation of step voltages/bits
CV RANGE	Attenuates voltage span of sequence (-5V...+5V in, scales down)
RESET	Resets play head to step 1
Various combos	Quantizer, shift offsets, special ops (see Button Combos ref)

Sequencer Button Combos:
See p.37 for list—hold/combine BIT SHIFT, ADVANCE, etc. to offset, reset, select quantizer, etc.

Patch Bay Reference

32 x 3.5mm Jacks (20 IN, 12 OUT), all Eurorack compatible

Inputs (White text, Black Body)

Jack	Function	Voltage Range
VCO 1V/OCT	VCO pitch control (sum with panel)	-5V to +5V
	MOD VCO pitch control (sum)	-5V to +5V

Jack	Function	Voltage Range
M VCO 1V/OCT		
M VCO SYNC	Resets triangle MOD VCO	0V to +5V
BLEND	Crossfader VC for BLEND	-5V to +5V
VCW IN	Audio in to wavefolder	-5V to +5V
FOLD	CV in for fold depth	-5V to +5V
VCW VCA CV	VCA level for VCW side	0V to +8V
VCF IN	Audio in to VCF	-5V to +5V
CUTOFF	VCF cutoff CV (sum)	-5V to +5V
VCF VCA CV	VCA level for VCF side	0V to +8V
U MIX 1 (RING)	Utility mixer 1 input (default: ring mod)	-5V to +5V
U MIX 2	Utility mixer 2 input	-5V to +5V
EG2 TRIG	Triggers EG2 envelope (rising edge)	0V to +10V
CLOCK 1	Ext clock SEQ1 (or both if 2 is unpatched)	0V to +10V
BIT FLIP 1	Digital in, flips current write step for SEQ1	0V to +10V
CLOCK 2	Ext clock SEQ2 (norm: from 1)	0V to +10V
BIT FLIP 2	Digital in, flips current write step for SEQ2	0V to +10V
MIDI		MIDI signals

Jack	Function	Voltage Range
	3.5mm MIDI In (Clock, Note On, Start/Stop/Continue)	
TRIGGER	Triggers both EGs (rising edge), unless EG2 patched	0V to +10V
RESET	Resets sequencer play head to step 1	0V to +10V

Outputs (Black text, White Body)

Jack	Function	Voltage Range
VCA	Mono main output (Eurorack level)	-5V to +5V (10Vpp)
M VCO	MOD VCO triangle out	-5V to +5V
NOISE	Noise generator out	-5V to +5V
MIXER	Mixer output (raw: VCO, MOD VCO, etc.)	-5V to +5V
EG1	Envelope 1 out	0V to +8V
EG2	Envelope 2 out	0V to +8V
U MIX 1+2	Utility mixer summed output	-5V to +5V
SEQ1 CV	Sequencer 1 CV (attenuated, quantized)	-5V to +5V
SEQ1 TRIG	Sequencer 1 trigger out (step is on)	0V to +5V
SEQ2 CV	Sequencer 2 CV (attenuated, quantized)	-5V to +5V

Jack	Function	Voltage Range
SEQ2 TRIG	Sequencer 2 trigger out	0V to +5V
CLOCK	Labyrinth clock out/MIDI clock out	0V to +5V

Quantizer Modes

- 15 built-in scales, plus unquantized (see manual p. 38 for mappings).
- Select quantization mode by `BIT SHIFT` + `BIT FLIP` (SEQ1) while running.

Reference: Voltages & Ranges

- Most CV/audio: **-5V to +5V** (Eurorack norm)
- Envelope outs: **0V to +8V**
- Triggers/gates: **0V to +5V** (5V logic)
- VCA CV inputs: **0V–+8V**
- Clock/Trig in: works with **0V–+5/10V**
- Main output: **-5V to +5V (10Vpp)** for modular, [1/4" rear audio out] for line level

Pro Tips

- Each path (VCW/VCF) has its own VCA (EG2 by default).
- Use PATCH BAY to break normals and customize routing.
- The sequencer is truly generative; use CORRUPT and BUFFER for evolving/locking patterns.
- U MIX allows you to submix and process external signals.
- BLEND can be CV modulated—try crossfading via envelope or sequencer.

- All parameters bolded in the manual correspond to actual knobs, sliders, buttons, or toggles.

Links

- Full [Moog Labyrinth User's Manual PDF](#)
- [Generated With Eurorack Processor](#)