Black Noise — Cosmos

- Manual PDF

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COSMOS Eurorack Module Cheat Sheet

Quick Reference for Patch, Logic, & Signal Processing

Inputs (Jacks & Touch Pads)

Input	Type	Description	Voltage Range
X IN	3.5mm jack	Main analog input (accepts CV, audio, gate, trigger, uni- or bipolar signals)	-10V to +10V
Y IN	3.5mm jack	Secondary analog input (as above)	-10V to +10V
X Pad	Capacitive Touch	Normalled to X In if jack is unpatched. Touch-controlled (performance) analog voltage.	~0V to +5V*

Input	Type	Description	Voltage Range
Y Pad	Capacitive Touch	Normalled to Y In if jack is unpatched.	~0V to +5V*

*Touch pad voltage dependent on skin contact and pressure.

Outputs (all 3.5mm jacks)

Output	Type	Description	Voltage Range
Analog Outs	Analog	1:1 buffered X, 1:1 buffered Y, Inverted X, Inverted Y, (X+Y)/2, (X-Y)/2, Inverted (X+Y)/2, Inverted (X-Y)/2	-10V to +10V
MIN	Analog	Minimum of X and Y (AND function for logic/gates)	-10V to +10V
MAX	Analog	Maximum of X and Y (OR function for logic/gates)	-10V to +10V
INV MIN, INV MAX	Analog	Min/Max with opposite phase	-10V to +10V
TZ CLIPPER, INV TZ	Analog	Through-zero clipper (unique wave/ring mod/XOR effect), and its inverse	-10V to +10V
Logic Gates (Gate)	Digital Gate	AND, OR, XOR, NOR, NAND, XNOR — logic gates output HIGH when analog outs above 0V (mirrored/not on lower hemisphere)	0V (LOW), +10V (HIGH)

Output	Type	Description	Voltage Range
NOT Gates (Gate)	Digital Gate	NOT logic of each gate (lower hemisphere)	0V (LOW), +10V (HIGH)
Trigger Outs	Digital Trigger	Fires on rising edge (main hemisphere) or falling edge (lower hemisphere) when gate crosses 0V	10ms trigger

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Controls

Control Location	Type	Function	Notes
Rear (PCB trimmers)	Trimmers	Calibration of thresholds for gate conversion (adjust if needed; usually set at factory)	Only adjust if malfunctioning
Touch Pads (Front)	Touch	Generates voltage when touched; replaces jack input when unpatched	Performance CV control
No knobs, buttons, or sliders on panel*			

*All core CV and gate manipulation occurs via patching, normalization, and external CV/utility modules.

Patching Quick Reference

Combine PEG, logic, and analog - **Standard Analog Combo:**
- (X+Y)/2, (X-Y)/2, MIN, MAX - **Digital Logic Outputs:**
- Gates for AND, OR, XOR, NOR, NAND, XNOR - Triggers (rising and falling edge) both hemispheres - NOT versions always mirrored on the lower row

Special Functions: - **Clipping/Ringmod:** TZ Clipper outs for unique analog XOR, ring mod, analog comparators - **Envelope/Rectifier:** Patch both X and Y with signal/inverted, use MIN, MAX for half/full wave rectification - **VCA/VC Clipper:** Patch signal and modulation envelope to X/Y, use TZ outputs for clamping/distortion - **Oscillator:** Self-patch XNOR gate back to input (with/followed by slew/LPF for frequency control) - **Logic/CV/Gate Manipulation:** Use MAX/MIN for window comparators, clock doubling, random rhythmic Gates with external S&H/noise

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Typical Voltage Ranges

Signal Type	Patchable Range
CV/Audio In/Out	Bipolar (±10V typical)
Gates/Triggers	0V (LOW), 10V (HIGH)
Pads	0V to ~+5V (touch)

Other Notes

- **No menus, switches, or modes:** Everything is patch-dependent!
- **Install with provided ribbon cable only** (special orientation, 10→16 pin).
- **Module Depth:** 30mm
- **Width:** 14 HP
- **Current draw:** +12V: 65mA / -12V: 65mA

Usage Examples

- **Half/Full Wave Rectifier, Comparator, Window Comparator, Envelope Follower**
- **VCA, Ring Mod, Oscillator, Clock Multiplier, Random Gate Sequencer**
- **AND/OR/NOT/XOR/NAND/XNOR gates for advanced trigger/ logic patching**
- **Wave Shaping, Harmonic Enhancement, Phase-Locked Loops**

Review the manual PDF for detailed patch diagrams and example setups.

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