Schlappi Engineering — Three Body

- Manual PDF

Download the Three Body Manual (PDF)

Below is a condensed "cheat sheet" reference for the Schlappi Engineering Three Body oscillator module, including jack/knob/voltage details and an operator's quick-start guide.

Three Body Cheat Sheet

Overview

- **Triple digital oscillator** for phase and FM synthesis.
- Flexible normalization between oscillators for complex stereo, drone, and FM patches.
- Switchable mode/state per oscillator for FREE (classic VCO/LFO) or RATIO (FM/phase/carrier).

Jack Reference

Jack	Type	Voltage Range	Function	Notes
V/OCT (per osc)	In	-8V to +8V	Linear pitch, best tracking -5V to +5V	Tracks 1V/oct (+RATIO in ratio mode)

Jack	Type	Voltage Range	Function	Notes
FM	In	-8V to +8V	Frequency modulation (Expo/Lin)	Will clip above 16Vpp (bipolar), 8V (uni)
PHASE	In	-8V to +8V	Phase modulation	Always active, state independent
FM/PHASE INDEX	In	0V to +10V	Index VCA CV (mod amount)	Unipolar, will clip below 0V/ above 10V
SYNC	In	~0.7V threshold	Hard sync or ratio tracking	Rising edge triggers sync/ tracking
TRANSPOSE	In	-8V to +8V	Global pitch offset	No effect in ratio mode
SINE	Out	-5V to +5V	Sine wave	Always available
COSINE	Out	-5V to +5V	Cosine wave (center osc only)	90° ahead of sine (nominal, not under PM)
TRIANGLE	Out	-5V to +5V	Triangle wave	
SAW	Out	-5V to +5V	Saw wave	
COSAW	Out	-5V to +5V	Cosine saw (center osc only)	90° ahead of saw

Jack	Type	Voltage Range	Function	Notes
SQUARE	Out	-5V to +5V	Square wave	

All outputs are bipolar, DC-coupled, ~10V peak-to-peak.

Control Summary

Knobs (per oscillator unless noted)

- **COARSE/MULT** – Coarse pitch / Ratio Multiplier
- **FINE/DIV** – Fine pitch / Ratio Divider
- **FM INDEX** – FM depth (outer oscillators)
- **PHASE CV** – Phase modulation depth (outer oscillators)
- **PHASE INDEX 1/2** – Phase mod index depth (center oscillator, two separate inputs)
- **FM CV** – FM modulation depth (center oscillator)

Jacks (per oscillator)

- See Jack Reference above

Switches (per oscillator)

- **FREE** / **RATIO**
- *FREE*: Classic VCO/LFO mode (expo/linear FM & standard pitch)
- *RATIO*: Tracks center or external via ratio (FM/phase in ratio domain)
- **LIN** / **EXP** / **PH (PHASE)**
- FM/Phase mode: Linear, Exponential, or Phase
- **HIGH/MULT** / **LOW/DIV**
- Range or multiply/divide for ratio/carrier frequency
- (Center has additional phase index controls)

Mode Summary

Mode	Description
Free Expo	LFO/VCO with exponential FM
Free Lin	LFO/VCO with linear FM
Ratio Phase	Tracking (FM/PM) with phase mod and CV over mult/div
Ratio Lin	Tracking with linear FM and CV over mult/div

Indicators/LEDs

- Three large LEDs: Show sine output (blue=pos, red=neg, purple=audio rate)
- Four small LEDs: Show index VCA modulation activity

Voltage Ranges (Summary)

- **V/OCT, PHASE, FM inputs:** -8V to +8V accepted; best tracking -5V to +5V
- **INDEX / PHASE INDEX inputs:** 0V to +10V unipolar (envelopes, will clip below/above)
- **SYNC in:** ~0.7V rising edge triggers sync/tracking
- **Outputs:** -5V to +5V typical, up to ~12Vpp on some systems

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Basic Patching Tips

- **Default Stereo FM:** Use center oscillator as modulator, outer oscillators as ratios/carriers.
- **Phase Modulation:** Center oscillator can receive phase mod from both outer oscillators, patched or normalized.
- **Cross Modulation:** Patch outer phase or FM ins to opposite outs for wild textures.

- **Ratio Tracking:** Outer oscillators in RATIO track to center osc, creating classic DX-style FM when modulating index/depth.
- **SYNC:** Feed external clock/signal to SYNC for hard sync (FREE) or ratio tracking (RATIO).

Internal Normalization

Input	Normalized From
Center PHASE (1/2)	Outer oscillators' SINE outs
Outer FM (L/R)	Center SINE / COSINE out
Outer PHASE (L<->R)	Opposite SINE out
Outer RATIO SYNC	Tracks center if nothing patched

Power Draw

- **+12V:** 95mA
- **-12V:** 50mA
- **Inrush:** 200mA on +12V at power up

Back Panel Header Functions

Name	Function
Expander	Unused (future)
PLL Mode	On = Phase lock for external tracking (useful for LFO/ oscilloscope)
Ext. Filter	

Name	Function
	Switches noise filtering for OSC1,3 PHASE & OSC2 FM (Low/High)
Sq. Phase	Remove phase mod from square out for pure/sub recovery
Phase Dir	Same direction for all outs (preserves phase relationship)

Calibration

- All units pre-calibrated; calibrate only if necessary (unlikely).
- Use back-panel buttons, 0V and 4V source, follow manual.

Quick Reference -- Basic Patch Ideas

- **Unmodulated Ratio FM:** Center FREE/HIGH, right RATIO, mult/div to tune harmonics.
- **Classic PM:** Center SINE/COSINE outs, phase index up, cross modulate outers for rich stereo.
- **Dub Bass:** Seq clock into left SYNC in ratio mode, mod input to left RATIO, monitor center out.
- **Rhythmic Creaks:** Center FREE, LOW; outer RATIO or FREE, lots of phase index and cross mod.

More Info

- Schlappi Engineering - Three Body Page
