# 2hp — Swarm

- Manual PDF

# Creative Modulation Techniques for 2hp Swarm

*(Focusing on Distorted Percussive Sounds, Aggressive Basslines, and Atmospheric Pads)*

The **2hp Swarm** is a compact but highly-featured "hyper oscillator" module capable of super-saw and super-pulse sounds through the layering and detuning of up to 88 oscillators. Below are advanced modulation approaches for sculpting unique textures for different musical contexts:

## 1. Distorted Percussive Sounds

**Techniques:** - **Low Voice Count, Extreme Detune:**
Turn the VOICES knob counter-clockwise for only 1–5 oscillators and push DETUNE into the "chaotic" range. This creates inharmonic, clangorous timbres perfect for metallic or bell-like percussion. - **Transient Modulation:**
Use a short, snappy envelope or trigger (from an EG, function generator, or sequencer) into the FREQ CV. This "pings" the pitch, turning the Swarm into a percussive voice. - **Waveform Alternation:**
Use the Wave Toggle to switch between sawtooth and pulse. Pulses can produce sharper transients—ideal for snares, claps, or hi-hats when combined with high detune. - **Patch Through Distortion/Lo-Fi:**
The manual recommends the **2hp Lo-Fi** for digital crunch; patch Swarm's

output into Lo-Fi for glitchy, crushed percussion. - **Extreme CV Detune Hits:** Use a random voltage or an LFO with extreme range into DETUNE CV. Rapid, wide detune bursts create stuttering, buzzing drum hits.

> **Example Patch:**
> - Attack envelope into FREQ CV
> - Random stepped LFO into DETUNE CV
> - Swarm out → Lo-Fi → VCA → Mixer/FX

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# 2. Crazy Basslines (Dubstep/Drum & Bass Style)

**Techniques:** - **Many Voices, Heavy Detune:**
Set VOICES to 20–40. Dial DETUNE to taste—first half for thick, tight bass; second half for formant-like or tearing dubstep sounds. - **VCO Modulation:** Modulate FREQ CV with an envelope for pitch drops or a synced LFO for vibrato/wobble effects. - **Waveform Blending:**
Experiment with both waveforms:
- Saw for thick, Reese-style sub-basses
- Pulse for squelchy mid-basses (especially with resonance in downstream filtering) - **Aggressive Filter Mod:**
Pair with the **2hp MMF** filter. Use high resonance and modulate the filter with envelopes or audio-rate LFOs for dynamic movement characteristic of "wobble bass." - **Parallel VCA Control:**
Route a secondary VCA to modulate the amplitude of Swarm's DETUNE or VOICES CV, creating evolving, morphing bass textures.

> **Example Patch:**
> - Envelope to FREQ CV (for pitch envelope)
> - LFO to DETUNE CV
> - Sequencer CV to VOICES CV
> - Swarm out → MMF (filter modulated by LFO) → VCA (envelope controlled) → Output

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# 3. Haunting Atmospheric Pads

**Techniques: - Max Voices, Subtle Detune:**
Set VOICES knob fully clockwise for the max 88 (Saw) or 55 (Pulse) oscillators. Set DETUNE to a sweet spot—first half for lush, analog drift; slightly more for eerie, chorused textures. - **Slow LFO/Envelope Modulation:**
Slowly modulate DETUNE and/or VOICES with LFOs for evolving pads. Sample & hold or random LFOs can add organic instability. - **Expressive FREQ CV:**
Modulate FREQ with attenuated, slow LFOs or aftertouch CV for drifting, emotional pitch movement. - **Processing After Swarm:**
Use heavy reverb and delay. Pairing with **2hp MMF** lets you sculpt pads via gentle high-pass, band-pass, or low-pass filtering, dynamically shifting their spectral character. - **Crossfade Saw/Pulse:**
Manually switch between waveforms during a performance, or use a sequential switch module to automate moves for evolving timbres.

> **Example Patch:**
> - Slow triangle LFO to DETUNE CV
> - Random LFO to VOICES CV
> - Swarm out → MMF → Big reverb/delay → VCA (modulated by envelope for pad articulation)

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# General Modulation Tips

- **All CV Inputs:**
  DETUNE, VOICES, and FREQ all accept -5V to +5V (bipolar) CV. This is ideal for using modulation sources with wide ranges and creative offsets.
- **Polyphonic Madness:**
  With up to 88 oscillators, dense stacking and detuning creates ultra-rich tones. Breathy, airy effects arise at max voices with subtle modulation.
- **Extreme Audio-Rate Mod:**
  Try patching another fast audio-rate oscillator or the Swarm's own

output (via attenuator) back into DETUNE or VOICES CV for FM-style effects or wild chaos.

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For detailed specs and further patching suggestions, check out the full 2hp Swarm Manual PDF.

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