Interferator M4L

OWNER'S MANUAL

Version 1.0

phasenpunkt

Contents

About

Interferator M4L is an experimental modulation engine that transforms the concept of wave interference into a playground for sound designers. Where most LFOs offer a single, predictable waveform, Interferator constructs a living, two-dimensional noise field from four independent layers — and lets you sample it at up to three points simultaneously.

The result is modulation that feels organic, complex, and deeply musical. Not random noise, but structured movement with a mathematical soul.

The Interference Engine

At the heart of Interferator are four independent noise generators, each with its own spatial texture and rhythmic behavior. These layers are blended through an interference algorithm, forming a continuously evolving two-dimensional terrain. Three probes sample this terrain at freely positionable points, extracting precise modulation values that can be mapped to any parameter in Ableton Live.

Key Features

- Four independent noise generators with seven pattern types (Perlin, Simplex, Cell, Rigid, Voronoi, Cloud, Fluid)
- Per-layer Texture and Rhythm controls for fine-grained movement design
- Three probes for simultaneous, independent modulation of Live parameters
- Min%/Max% range control per probe, including inverted modulation
- Three interference algorithms for different blending characteristics
- Global smoothing for all probe outputs
- Real-time visualization of the interference field and probe positions

Installation

Prerequisites

- Ableton Live Suite 12 or higher

Installation Steps

- Download and Extract: Unzip the downloaded file to a location of your choice.
- Locate the Max4Live Device: In the extracted folder, find the file named `Interferator.amxd`.
- Install in Ableton Live:
  - Open Ableton Live.
  - In Ableton Live, navigate to the browser panel on the left side.
  - Locate the "Max for Live" section in the browser.
  - Drag and drop the `Interferator.amxd` file into the "Max Audio Effect" folder in the browser.

Alternative Installation Method

Alternatively, copy the `Interferator.amxd` file to your Ableton Live User Library:

- Windows: `C:\Users\[YourUsername]\Documents\Ableton\User Library\Presets\Audio Effects\Max Audio Effect`
- macOS: `/Users/[YourUsername]/Music/Ableton/User Library/Presets/Audio Effects/Max Audio Effect`

Use Interferator M4L

To use Interferator M4L, drag it from the Max for Live browser onto any track in your Ableton Live set.

Access Manual

The detailed Owner's Manual is included in the download as a PDF file. Open this file for comprehensive information on using Interferator M4L. In addition, open the info view in Ableton Live for a short description of each UI component.

Quick Start

1. **Add Interferator M4L to a track**: Drag and drop the device onto any track in your Ableton Live set. It works as an audio effect but does not process the audio signal — it only generates modulation.
2. **Observe the interference field**: The large visualization in the center shows the combined noise terrain generated by all four layers. Three probe indicators (circles) mark the current sampling positions.
3. **Map a probe to a parameter**: Click **Map** on one of the three probe rows in the left panel, then click any automatable parameter in Ableton Live — a dial, a filter cutoff, a reverb size. The parameter name will appear in the probe row.
4. **Set the modulation range**: Adjust **Min%** and **Max%** to define the output range. At Min%, the probe outputs its minimum value; at Max%, its maximum. Set Min% higher than Max% to invert the modulation direction.
5. **Position the probe**: Use the **X** and **Y** controls to move the probe's sampling point across the noise field, or drag the circle directly in the visualization.
6. **Shape the noise field**: Switch between the **L1–L4** layer tabs and experiment with different **Pattern** types, **Density**, and the **Rhythm** controls to sculpt the movement character.
7. **Try all three probes**: Map the remaining probes to different parameters. Because each probe samples a different point on the same shared field, their movements are mathematically related — complex, but not independent.

Controls

Probe Mappings

The left panel contains three independent probe mappings. Each probe extracts a single modulation value from the interference field and sends it to a mapped Live parameter.

Each probe row has two lines:

Top line * **Target**: The name of the currently mapped Live parameter. Click **Map** to start a new mapping — Interferator M4L will capture the next parameter you click in Live. Click **× (Unmap)** to release the mapping. * **Min% / Max%**: Defines the modulation output range. Min% sets the value generated when the probe reads its minimum amplitude; Max% sets the value at maximum amplitude. Min% can be set higher than Max% to produce inverted modulation.

Bottom line * **X / Y**: The coordinates of the probe's sampling position on the interference field (0–100%). Can also be adjusted by dragging the probe indicator in the visualization.

Smoothing (below all three probe rows): Smooths the modulation curves for all probes globally. Higher values produce slower, more fluid transitions; lower values preserve sharp, fast-moving details.

Interference Field

The central visualization shows the real-time rendering of the merged interference terrain produced by all four layers.

- **Probe Indicators**: The three circles represent the current probe positions. Click and drag to reposition, or use the X/Y controls in the probe rows.
- **Algo (I / II / III)**: Selects the blending algorithm used to combine the four noise layers into a single interference field. Each algorithm produces a distinct character — try switching between them with layers active to hear the difference in modulation behavior.

Layer Controls

The right panel controls each of the four independent noise generators (Sources).

L1 – L4 tabs: Selects which layer to edit. The small thumbnails next to the tabs give a preview of each layer's current noise pattern. These layers are combined through the Interference Engine to form the complex, multi-dimensional terrain shown in the center. Editing each layer's spatial and rhythmic settings defines the foundation of your modulation.

Texture

- **Pattern**: Defines the mathematical character of the layer. Choose from: **Perlin**, **Simplex**, **Cell**, **Rigid**, **Voronoi**, **Cloud**, **Fluid**. Organic, rolling flows (Perlin, Simplex) contrast with sharper, more geometric or crystalline textures (Cell, Rigid, Voronoi). Cloud and Fluid introduce softer, diffuse shapes with a more atmospheric quality.
- **Density**: Adjusts overall textural complexity by scaling the noise field's zoom level and the intensity of its rhythmic modulation. Lower values produce broad, sweeping movements; higher values create tight, intricate patterns.
- **T-Tilt (Texture Tilt)**: Balances the detail density and spread between the horizontal (X) and vertical (Y) dimensions of the noise field. At center (50%), both axes are weighted equally.
- **Flow**: Adjusts the speed of temporal noise evolution, transitioning from static patterns through fluid movement to rapid, energetic morphing.

Rhythm

- **Duration**: Sets the master cycle length for the axis. When set to **Off**, the layer runs without rhythmic cycling. Short values create tight, pulsing loops; long values (e.g., 4 Bars) allow for slow, evolving soundscapes that change over time.

- **Offset**: Shifts the layer's starting position in the cycle. Use different offsets across layers to create complex polyrhythms and evolving interferences between the individual noise fields. A value of 50% starts the layer's pattern on an offbeat.

- **Entropy (R-Entropy)**: Morphs the movement character from smooth oscillations to sharp rhythmic pulses and into chaotic instability. Think of it as a dial moving from Sine → Ramp → Jitter. At low values, movement is predictable and fluid; at high values, it becomes fragmented and unpredictable.

- **R-Tilt (Rhythmic Tilt)**: Distributes rhythmic stability and chaotic interference between the horizontal (X) and vertical (Y) movement drivers. At center (50%), both axes share equal influence.

Service

Should Interferator M4L ever require servicing, please locate your nearest Authorized Interference Technician using the enclosed directory.

There is no enclosed directory.

What there is: a straightforward update policy. Whenever a new version is released, a fresh download link will be dispatched to your inbox — no registration card to mail back, no serial number to decipher from a faded sticker on the rear panel. Simply visit phasenpunkt.de, or reach us directly at info@phasenpunkt.de with questions, feedback, or field reports from particularly interesting noise fields.

Version History

Version 1.1.0 (2026-05-08)

- Improve performance and stability.

Version 1.0.0 (2026-04-30)

- Initial release.

Interferator M4L is a product of phasenpunkt,
crafted with love, code, and a touch of mathematical interference.

Visit us in the digital realm: https://phasenpunkt.de

Got questions? Found a glitch in the matrix? Or just want to share what your probes are modulating?

Drop us a line: info@phasenpunkt.de