

TheSynthesizer User Manual

A dual-engine subtractive synthesizer with FM, modulation matrix, and a modular effects rack.

Installation

VST3 (use inside a DAW):

Copy `TheSynthesizer.vst3` (the whole folder) into:

- Windows: `C:\Program Files\Common Files\VST3\`

Restart your DAW and rescan plugins.

Standalone:

Double-click `TheSynthesizer.exe`. No installation required.

Presets:

There are no presets coming with the synth, but you can save yours.

The presets get stored here:

`C:\Users\...\Documents\TheSynthesizer\`

Interface Overview

The window is divided into five regions:

- **Top strip:** spectrum analyzer (left) and oscilloscope (right) showing the current output signal
 - **Engine area** (upper main): tabs for Engine 1, Engine 2, and FX
 - **Filter sidebar** (right of engines): two filters with shared routing
 - **Modulation strip:** shows your LFOs, Envelopes and active modulation routes
 - **Modulation tabs** (lower main): Keyboard, Envelopes, and LFO controls
 - **Footer:** preset selector, save/delete buttons, and polyphony mode
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The Engines

Each engine has 3 oscillators + a noise generator. Engine 2 is off by default, click the toggle in its tab header to enable it.

Per oscillator:

- **Wave:** Sine, Triangle, Saw, Inv Saw, Square
- **Width:** pulse width for square, skew for triangle
- **Coarse/Fine:** tuning in semitones (coarse) and cents (fine)
- **Level:** oscillator volume in dB
- **FM Amount:** how much this oscillator responds to the engine's FM signal

The engine-wide controls :

- **Coarse/Fine:** master tuning for the engine
- **FM source:** blend between noise and Osc 3 as the FM modulator
- **FM cross:** blend between local modulator and the *other* engine's output
- **Noise:** color knob (red → white → blue) and volume
- **Master:** engine volume and filter-mix split

The Filters

Two state-variable filters with three types each (Lowpass, Highpass, Bandpass).

Each has cutoff, resonance, volume, and pan.

The **Routing** knob continuously morphs between parallel (both filters get the engine signal directly) and series (Filter 1's output feeds Filter 2).

At 0.0 it's pure parallel; at 1.0 it's pure series. Anything between is a mix.

Each filter has its own ON/OFF toggle. Both off = full signal bypass.

Envelopes

Single shared ADSR for amplitude.

ADR mode: enables Attack→Decay→Release behavior, ignoring noteOff and auto-triggering release after the AD phase.

Modulation

Three LFOs are available. Each LFO has its own panel (LFOs tab) where you shape the waveform, and a tile in the Modulation Strip showing its current output as a live waveform.

Routing modulation to a knob

1. **Right-click** any modulatable knob (filter cutoff, osc level, envelope times, etc.)
2. Pick "LFO 1", "LFO 2", "LFO 3" or "Env 2" and "Env 3" from the menu
3. A coloured ring appears around the knob, sweeping in time with the LFO

Adjusting modulation depth

Click the **Assign** button on the LFO's tile in the strip. The strip enters inspection mode, showing pills for each route from that LFO. Drag the depth slider on each pill to adjust how much that LFO affects that parameter.

The depth slider goes from -1 to +1. Negative depth inverts the modulation.

Removing a route

Either:

- Right-click the knob and choose "Remove LFO N"
- Click the X on the pill in the strip's inspection view

LFO shaping

Inside the LFOs tab, each LFO has:

- **Wave:** Sine, Triangle, Saw, Square, Sample & Hold, Random
 - **Rate Hz / Division:** free-running rate or tempo-synced division
 - **Sync mode:** Free (Hz) or Synced
 - **Symmetry:** skew for Triangle, pulse width for Square
 - **Smooth:** low-pass filtering of the output
 - **Phase:** where in the cycle the LFO starts
 - **Polarity:** bipolar (-1 to +1) or unipolar (0 to 1)
 - **Retrigger:** "Note Trigger" restarts the LFO when a note begins after silence; "Free Running" keeps the LFO ticking continuously
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Effects (FX Tab)

Six slots total: 3 in series, 3 as aux sends.

Each slot has a type selector: None, Delay, Reverb, Distortion, Chorus, Phaser, or Bitcrusher. The slot's Mix knob blends dry and wet.

Series slots process sequentially: signal flows $S1 \rightarrow S2 \rightarrow S3 \rightarrow$ output.

Aux slots receive a parallel send from the filter section (set via the Send knob next to the filters). The aux chain processes the sent signal in parallel and returns it via the Aux Return knob at the top of the FX tab.

The FX power toggle in the tab header bypasses the entire FX section. Series and Aux have their own toggles too.

Presets

The preset bar at the bottom-right lets you save, load, and delete patches.

Saving: click Save, enter a name. Use *Category/Name* (e.g. *Bass/Wobble*) to organize presets into subfolders.

Loading: select from the dropdown. The preset includes all parameters *and* modulation routes.

Deleting: select a preset, click Delete, confirm. Files live on disk in your Documents folder.

Known Limitations / Issues

- Modulating some effects parameters can create artifacts
 - Can not use amp envelope to modulate other parameters
 - The 2 envelopes that can modulate are not affected by the keyboard playing mode. They are always legato.
 - Enabling ADR for any envelope enables ADR for all envelopes
 - Not all effects parameters can be modulated
 - FM noise source is not modified by the noise colour. It's always only white noise.
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Feedback

This is just a demo. If you find a bug or have any feedback please let me know! Have fun!

My contacts

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