



# massTURBOtar

## VSTi Plug-in manual



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## Introduction

Morfiki's **massTURBOtar** is a hybrid synthesizer with unique morphing capabilities. Every parameter (excluding the parameters marked orange) can be controlled via MORFIKI preset system.

Features include :

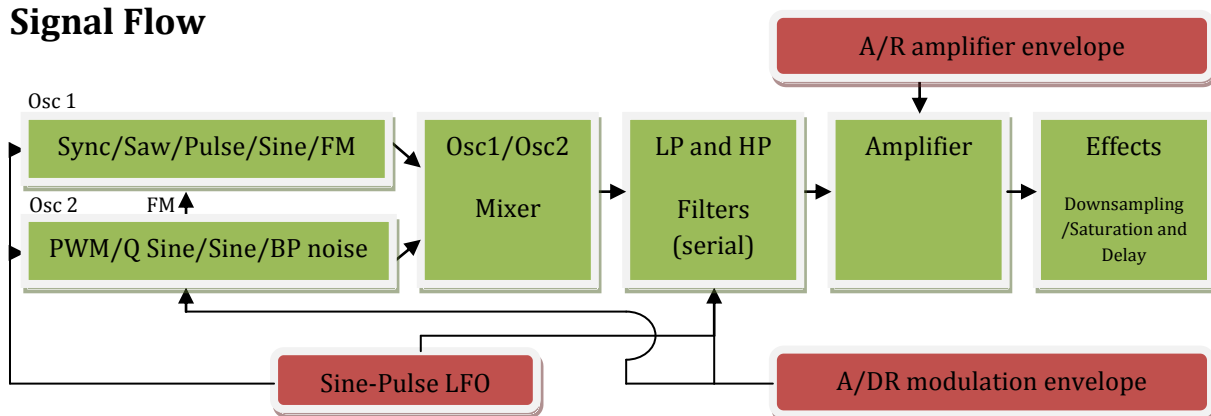
- two morphable oscillators.
- lowpass/bandpass/hipass (band type and width controlled via 12dB/octave lowpass and hipass filter).
- A/R amplifier envelope.
- modulation : sine/pulse lfo and A/DR envelope – both with morphable destination.
- voice control: polyphonic/ legato
- effects: chorus, sample rate reduction, soft saturation, delay.
- parameters are controlled by **MORFIKI preset system** (the system itself is described below), velocity to bank modulation with adjustable smoothing included.
- dropdown menus with fixed values for oscillator scale transposition and tempo synchronization for lfo speed.

## Installation

To install massTURBOtar , simply copy „massTURBOtar.dll” file into your vst plugins folder.

**WARNING!** massTURBOtar plug-in can generate high levels at its output (for example ,it can be caused by setting a high feedback in filter) – it is recommended to set a limiter/soft clipper plug-in in a fx plug-in rack of your DAW right after the massTURBOtar.

## Signal Flow



The block diagram above shows the routing in massTURBOtar. Signals outputted in both oscillators are mixed (balance between them can be controlled) and feed through filter unit. In

the next stage, the effects can be applied. Finally, levels and amplifier envelope can be adjusted before signal reaches the output.

There are also two modulation sections: lfo and one A/DR envelope. The lfo can be fed to global pitch, oscillator 1 shape, oscillator 2 shape, or filter cutoff. There, modulation feed can be intermixed between global pitch and oscillator 1 shape, oscillator 1 shape and oscillator 2 shape or between oscillator 2 shape and filter cutoff – the nature of such modulation routing is caused by a need to morph *modulation destination* parameter smoothly. The A/DR envelope (it's behavior is explained later in this manual) works in similar manner, except that it has only two modulation sources – oscillator 1 shape and filter cutoff.

Every section can be controlled by MORFIKI preset system.

## Parameters overview

All massTURBOtar parameters and its functions are described below. They were divided into six different groups.

- a) *Oscillator 1/Oscillator 2 section* – This section contains 5 parameters. **Osc 1 CTRL** sets the shape of the first oscillator. SYNC located at the hard left setting will output a saw wave shape that is internally synchronized with another saw oscillator. Adjusting the parameter between SYNC and saw shape will change the *pitch* of a synced saw. Following the saw, the shape morphs gradually to a square shape and then from square shape to a triangle shape. Changing the parameter further will introduce FM (frequency modulation) to a triangle shape – the source is Oscillator 2.

**Osc 2 CTRL** - Oscillator 2 is build basically with bit-reducer, noise generator and very narrow bandpass filter. One can setup those three to output a square shape. The duty of the pulse is controlled by a DC offset of the signal. Between full square and pure sine, the signal is gradually quantised (Q~ means half-quantised sine shape). Above the sine shape, the bandwidth and Q factor of the bandpass filter is reduced. **Osc 2 Pitch** parameter changes the tonal pitch of Oscillator 2 by  $\pm 24$  semitones. **Osc Mix** sets up the mix between Oscillator 1 and Oscillator 2. **PitchBend** defines by how many semitones the global pitch is transposed when using the PitchBend Midi Control.

- b) *Filters section* – As the name suggests, this is the place to control the filtered outcome of the signal. **LP/HP Cutoff** defines the cutoff frequencies of both filters. At zero (12 O'clock) position lowpass cutoff value is set to maximum, whereas hipass to minimum (bypass). Tweaking the parameter gradually to left



will change the lowpass cutoff value to minimum – tweaking it to right will change the hipass cutoff value gradually to maximum. **Reso** sets the resonance of both filters. **BandWidth** controls the initial shift in cutoffs of both filters. By changing the parameter to a lower values, the cutoffs will become less distant to each other – resulting in bandpass filtration. Filters have six types, based on the character and number of stages: **cold12**, **hot12**, **cold24**, **hot24**, **cld24+** and **hot24+**.

- c) *Amp Envelope section* – A/R envelope and **Volume**. The envelope works as follows: small value of **Attack** will result in short attack and *vice versa*. **Release** parameter behaves the same way. As the sustain is predefined at 100%, there is no need for decay.



- d) *Lfo Modulation section* – Standard lfo with controllable speed, shape and depth. **Lfo Speed** behaves in a logarithmic way, to adjust better the lower frequencies (for slow vibratto). Synchronising the speed to host tempo is also possible by a dropdown menu. NOTE: Although the parameter allows to be synced to tempo, the function itself is **on demand only** – meaning that when tempo changes, the value **will not be updated**. When one of the synchronization option is selected, the plug-in retrieves tempo information from the host only at that point, adjusting the knob to the proper value. There is no constant monitoring for tempo changes – plug-in updates this information only when user do so, by selecting fixed value from dropdown list again. **Lfo Depth** controls the depth of the modulation and lfo shape. The knob that sets this parameter is bipolar – the *negative* values will control the depth of a pulse shaped lfo, *positive* – the depth of a sine shaped lfo. **Lfo Destination** – Modifying this parameter will change the source of modulation (see *Signal Flow* chapter in this manual for details).



- e) *Modulation Envelope section* – Second modulation section. **Modulation Envelope Depth** sets the depth of a A/DR envelope – as **Lfo Depth**, this parameter is also bipolar, which means that at *negative* values the envelope is inverted. Small value of **Attack** will result in short attack and *vice versa*. This envelope has its sustain at 0% (meaning that envelope will eventually fall to a level set by **Modulation Envelope Depth**) – therefore the second envelope parameter is called **Decay/Release**. Decay value is equal with a value set by a knob. Release = Initial Value \* (Release of Amplifier Envelope/10). **Modulation Envelope Destination** sets the source of modulation (see *Signal Flow* chapter in this manual for details).



- f) *Effects section* – this section consists of 4 effects: chorus (**Stereo**), sample rate reduction / soft





saturation (**Redu/Drive**), that works in a bipolar fashion (similar as **Lfo Depth**) and the only not-morph able parameter – **Delay**. The parameters for effects are predefined and change along with the knob settings.

NOTE: Next to standard symbols/text around knobs, some of the controls have down-shaped arrow or R at the bottom. The arrow will unfold a dropdown menu: for tonal transposition, precise waveform shape or a tempo-sync of lfo speed. **Double clicking** on R will restore the original knob position (used in bipolar controls).

NOTE: All the morph able parameters have visual representation of their current values. In addition, the values that are modulated either by lfo or modulation envelope will have their visuals changed in real-time – for **one voice** at a time.

## MORFIKI preset system

MORFIKI is the system of parameter control. It's the basic idea behind plug-in series, we are going to release. Our goal, is to let You manipulate Your sound easily, without lines of weird automation.



Every preset has five MORFIKI sub-presets. Use MORPH knob to slide between them. Use SHOW buttons to switch between sub-presets A-E. If MORPH LINK button is active - MORPH knob will follow. Use COPY buttons to copy knobs state from selected sub-preset.

In massTURBOtar, the **MORPH** parameter can also be controlled by a velocity of a current note (the last note when the chord was released) . Depth of such modulation is controlled by **VELO > MORPH** control. The modulation is unipolar and relative - the initial setting of **MORPH** knob is important. For example, setting the **MORPH** to a first bank (A) and **VELO>MORPH** to maximum will result in maximum modulation range. **Smoothing** will influence the range and speed of velocity to morph modulation.

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## Credits

*Morfiki Team 2008/09 :*

*Dominik Popiński (LpD)– main development, gfx*

*Jacek Majer (Jackie)– occasional coding, beta testing, documentation*

*Much thanks to Rick Christy (GrimmJack aka gj!) for additional presets!*

**Visit us at:** <http://morfiki.blogspot.com/>

*Made with **SynthEdit***

*Modules by: **D. Haupt ,P. Schoffhauzer ,D. Larkin, K. Lynch, E-Phonic, R.Jeliffe***

*We tried to include here all people that contributed to our work – everyone else that made massTURBOtar possible and wasn't mentioned, please contact us!*