bEnt

BENT-WAVE MODULATION SYNTHESIS

KORG MULTI ENGINE PLUGIN

INTRODUCTION

WHAT IS IT?

Bent is an oscillator plugin for Korg's multi engine. It implements a novel synthesis method called "bent-wave modulation", developed by Sinevibes. **Bent** combines a modulator-carrier pair of sine oscillators with a unique "bender" module which changes the modulator signal's curvature, phase, and time symmetry. Contrary to its digital nature, bent-wave modulation produces sounds more akin to a mix of two analog oscillators which were hard-synchronized and filtered – and has smooth, elastic shape morphing. Due to the specific density and rounded curvature of its output signal, **Bent** also forms a perfect symbiosis with an analog low-pass filter, creating sounds with incredible plasticity.

SPECIFICATIONS

– Two sine oscillators with unique module that "bends" curvature, phase, and time symmetry before the frequency modulation stage.

– Five different output waveforms with variable shape and harmonic balance.

– Built-in lag filters for noise-free, ultra-smooth parameter adjustment and modulation.

– Built-in LFO with widely adjustable frequency (0.1 to 10 Hz).

– Built-in envelope generator with widely adjustable attack and decay times (1 ms to 10 s).

COMPATIBILITY

– Korg **prologue**

– Korg **minilogue xd**

– Korg **NTS-1**

PACKAGE CONTENTS

– **Bent** plugin in **prologue**, **minilogue xd** and **NTS-1** formats

– 16 example patches in **prologue** and **minilogue xd** formats

– User Manual PDF

– Multi Engine Preset Converter utility

BEFORE YOU START

Before you install third-party plugins, please make sure that you have the latest **system update** installed on your KORG synthesizer, and that you also perform the **panel update** and **voice update** procedures if they are required. Older system versions can have major issues with newer plugins. You should keep the **Sound Librarian** application updated as well.

Follow the links below to check and download the latest software for your synthesizer:

– Software for KORG **prologue**

– Software for KORG **minilogue xd**

– Software for KORG **NTS-1**

INSTALLING THE PLUGIN
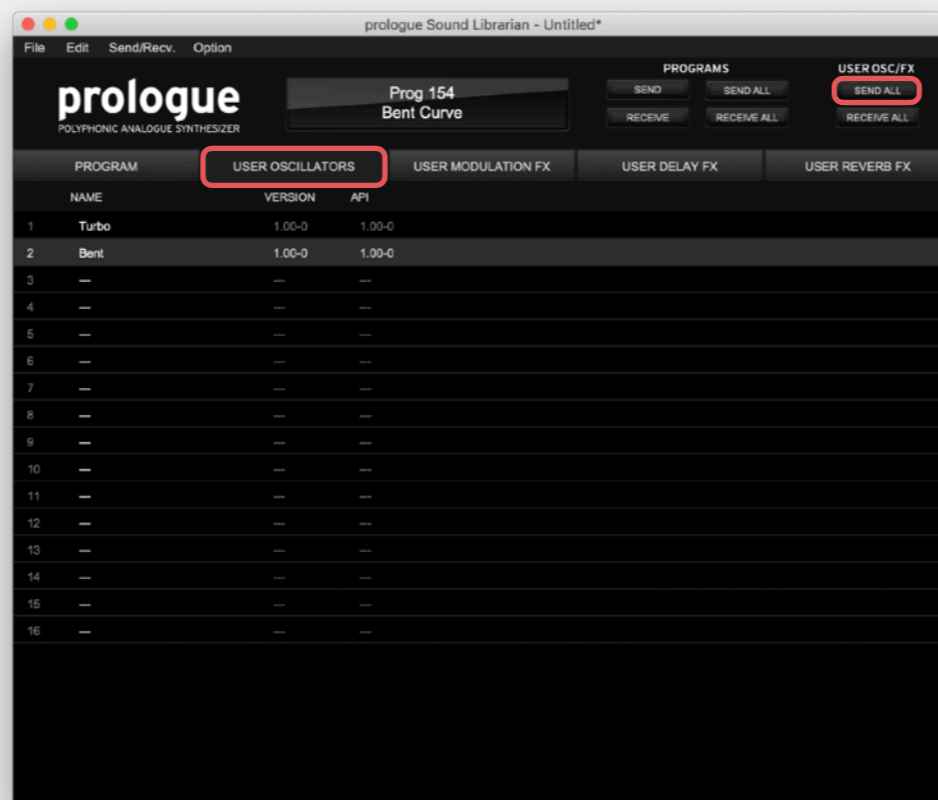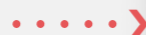
STEP 1

Connect your computer to your synthesizer via MIDI or USB-MIDI and launch the Librarian app.

STEP 2

While in the USER OSCILLATORS tab, drag and drop the **Bent** plugin file into any available slot.
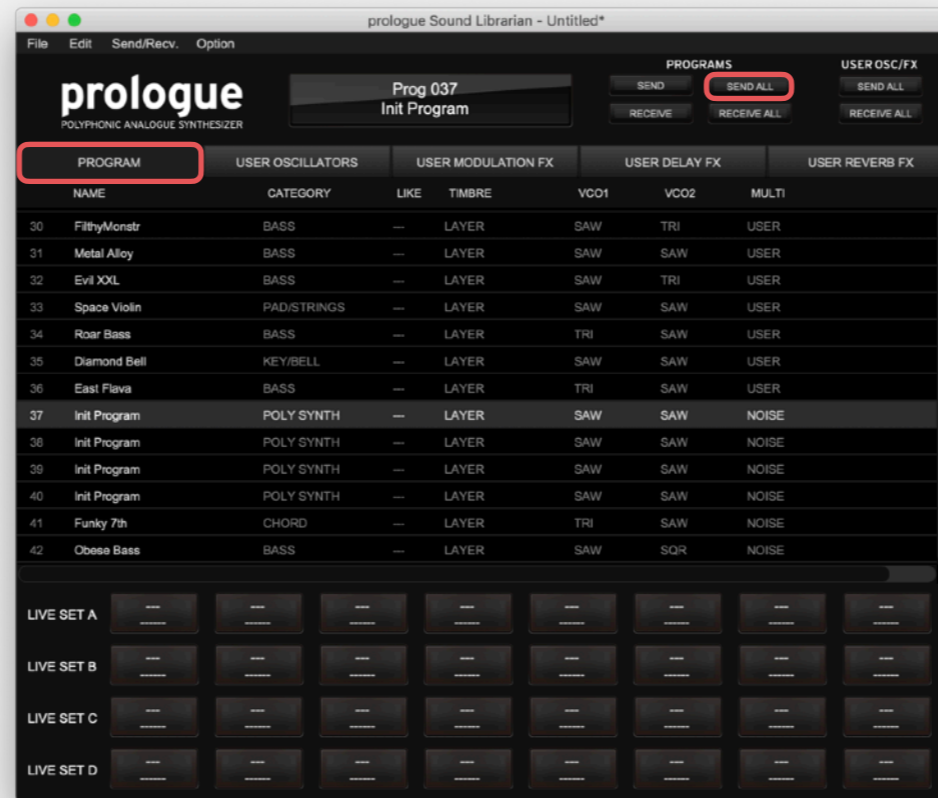
STEP 3

Press the SEND ALL button in the USER OSC/FX toolbar section.

To get the latest version of **Bent**, visit the **Sinevibes** website and request your downloads: www.sinevibes.com/updates

INSTALLING THE PATCHES

STEP 1

Connect your computer to your synthesizer via MIDI or USB-MIDI and launch the Sound Librarian app. Make sure you are in the PROGRAM tab.

STEP 2

In the **Bent** package, open the Presets folder, and then open the folder corresponding to the slot number into which you installed the plugin.
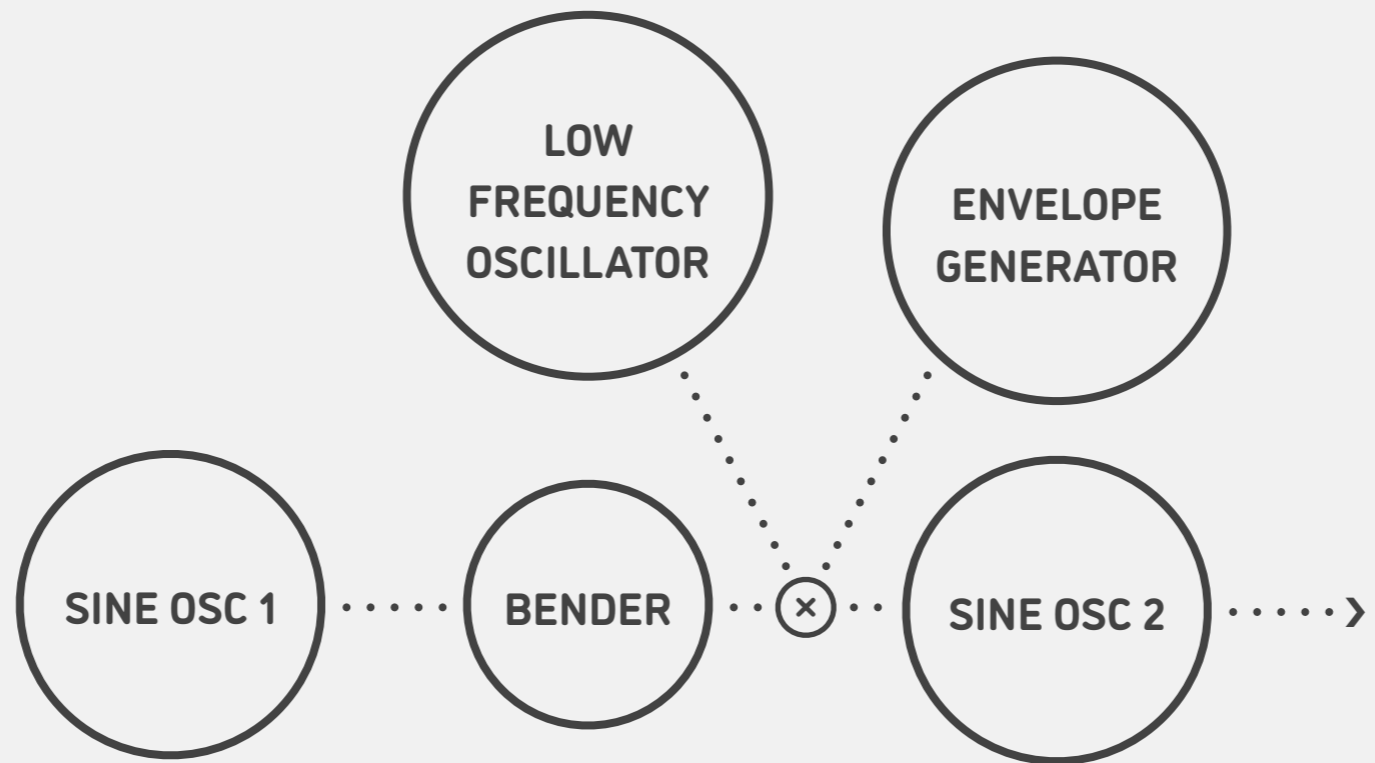
STEP 3

In the Sound Librarian, click to highlight the target preset location, then drag and drop the desired preset file onto this location. Repeat this for all presets you'd like to install.
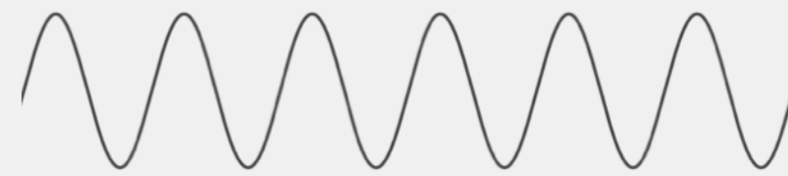
STEP 4

Press the SEND ALL button in the PROGRAMS toolbar section.

STRUCTURE DIAGRAM

SCIENCE

Like many other synthesis methods, bent-wave modulation is built around sine waves, and this is how a single sine wave looks like. It's the purest tone that exists, containing oscillations at just a single frequency.

If one sine wave ("modulator") applies frequency modulation onto another sine wave ("carrier"), dozens of new frequencies appear in the signal and thus its shape gets more complicated. This is traditionally called "FM synthesis" and it produces very characteristic cold, metallic tones.

In bent-wave modulation synthesis, however, the modulator wave undergoes several very specific modifications to its curvature and symmetry before being applied onto the carrier wave. The resulting output is similar to a complex analog waveform with a warm character and "elastic" shape morphing.

As the amount of modulator wave applied onto the carrier wave is increased, the signal shape morphs in a very unusual way - as in this example, from saw-like to pulse-like. With multiple different modulator-bender-carrier configurations, bent-wave modulation is able to produce unique new waveforms which are not possible with other synthesis methods.

PARAMETERS

SHAPE / A

Use the SHAPE knob of the multi engine oscillator to adjust the amount of frequency modulation between the bent-wave modulator and carrier and elastically morph the final output waveform. The effect of this parameter highly depends on the type of selected oscillator/bender configuration (see below).

SHIFT + SHAPE / B

Hold the SHIFT button and then use the SHAPE knob to adjust the phase offset of the modulator in relation to the carrier: 0–100% (mapped to 0 to 180˚). This subtly shifts the output spectrum's balance between even and odd harmonics.

Type

Select one of 5 different modulator-carrier and bender configurations, each giving its own distinct tone. This and all other additional parameters are adjusted by switching to the MULTI ENGINE page in EDIT MODE and turning the PROGRAM/VALUE dial (**prologue** and **minilogue xd**) or by holding the OSC button, turning the TYPE dial and then turning the B knob (**NTS-1**).

LFO Amount

Amount of low-frequency oscillator output applied onto the carrier modulation depth: 0–100%.

LFO Rate

Low-frequency oscillator rate: 0–100% (exponentially mapped from 0.1 to 10 Hz).

EG Amount

Amount of envelope generator output applied onto the carrier modulation depth: 0–100%.

EG Attack

Envelope generator attack time: 0–100% (exponentially mapped from 1 ms to 10 s).

EG Decay

Envelope generator decay time: 0–100% (exponentially mapped from 1 ms to 10 s).

SINEVIBES

ROCKET FUEL
FOR YOUR CREATIVITY

www.sinevibes.com