Klangformer VST Development Snapshots
public beta download

!j development
Klangformer 2 BETA ,
high definition sonic workstation
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Here one can download the latest development snapshot of Klangformer 2 BETA. Please note that you download preliminary software, usage completely on your own risk.

The package is divided into several single parts, which must be downloaded all together into one single folder.
We recommend to use a download manager (about 30 MB download in sum).
The installation process itself is 100% automated. Once downloaded, execute klangformer2beta.exe
and follow the logic of this installer program. You can restless deinstall Klangformer at any time.

Please note also, that there may be consecutive updates to the main package in the meantime.

One word to Klangformer's price: Klangformer is (and was ever) free for strictly private use.
For commercial use and/or usage for any kind of commercial results, there is to pay an amount of 99 EURO per single license. This includes also the BETA versions of Klangformer. Please register via email at info@klangformer.de . Donations are welcome, of course.

Base Package :

Important note for all existing users: Please deinstall BETA 1 completely before you install BETA 2 !

Current main release BETA 2.0.0.521 (development snapshot)
Notes to this release:
- due some bugs, the Channel Cross Synthesis (Vocoder) is **disabled** in this release
- Speech synthesizer includes merely a few examples, but a third party editor for creating key maps is included.
- documentation is not updated with the new features yet (eventually see "How To..." section for some guides)
- only one exemplary XWave soundfont is included (10 MB Stereo Grand Piano)
- shuffle control for the sequencer/arpeggiator not available yet as graphic control

- there may be some undiscovered bugs (please tell us about, if you want any further development)

- **KF2 part1** (ca. 4 MB)
- **KF2 part2** (5,5 MB)
- **KF2 part3** (5,5 MB)
- **KF2 part4** (5,5 MB)
- **KF2 part5** (5,5 MB)
- **KF2 part6** (5,5 MB)

Consecutive Updates :

What are consecutive updates?
Due the big size of the base package, there are regulary updates of the klangformer.dll and possibly other important files. This has the advantage of relatively small consecutive downloads for faster updates for existing installations.
Please note, **that a consecutive package allone is not working**. The base package is required to work with Klangformer, so you have to download it at least ones completely.

- **klangformer.dll** (2.5 MB)
  (consecutive update version 2.0.0.523, uploaded: 03.08.2004 MEZ 21:10 Uhr)
  - the XGenorator waves assignment was broken, so usage of XGen waves was not possible - fixed now

  Please replace the original klangformer.dll with the new one (inside your VST plugin folder)

How To... :

This section includes some startup help for the new features of Klangformer 2 (at least this was the plan).

- **How to get the speech synthesizer working / create your own phonetics**

  Klangformer includes a diphone speech synthesizer. Unless other synthesized speech concepts, a diphone speech engine is based on a real human phonetics database.
  A diphone database is language dependant, Klangformer includes a German database per default, because this is one of the best sounding available (and we are Germans). But this can be exchanged with any other language databases.

  Hear an example : sport.mp3

Klangformer's speech synthesizer is not to understand as a common Text-To-Speech synthesis. This is a completely differend field, not discussed here. The speech synthesizer engine of Klangformer is driven by low level phonetics description (*pho) files. This is much more usefull for musical applications. The included diphone speech synthesis performs pitch scaling with formant correction, so higher quality "singing" speech is possible.

Note: The speech synthesis of Klangformer is monophonic and reserved for MIDI channel 1.

*.pho files are simple text files, which can be reed and edited by humans. The syntax for creating phonetics with its duration and pitch for the speech is dependant from the diphone database and is documented clearly inside the database documentations.

After a successfull install of the Klangformer base package, there should be a link inside your Windows startup menu (!j development/Klangformer/Speech Synthesizer Editor). This is a third party application where you can create and edit your own *.pho files.

You can download several diphone language databases from MBROLA project page at the following location: http://mambo.ucsc.edu/psl/mbrola

To configure this editor, you have to assign the wanted diphone database first, which is to locate in the <Windows Directory>\KFData\SpeechSynth \database.dat. There are also other important files located, like licenses, documentations and the current database itself. Please read the documentation of the database to discover the syntax for the *.pho files and/ or study some of the included example files to feature out how it works.

Important: If You want to use your own language database, you have to rename it "database.dat" and (re)place it into the Klangformer's \SpeechSynth directory. Please note, that the *.pho files are also language dependant. (This means, you cannot pass a german *.pho file thru a english diphone database and so on.) You cannot use more than one different databases at same time in general.

There is a sub-folder inside the named directory above: \MIDIMap. This directory is finally very important for the usage with Klangformer. Here you can place up to 128 preset *.pho files with your own creations. Please note, that naming convention for the files must be exactly followed (000.pho to 127.pho). The files correspond with the MIDI keys (note numbers), when Klangformer's oscillators are switched to speech synthesis mode.
Those files are loaded into the speech synthesizer engine on startup (by activating the speech synthesizer inside Klangformer).

Important: You have to accept the license dialog to get the speech synthesizer working, otherwise the synthesizer will be silent until you restart

Windows.

Please note, that it is also possible to to use the pitch bend to adjust the pitch of the speech synthesis in realtime (but this is additionally, without formant correction).
A later implementation will provide You with a graphical phonetics editor directly inside Klangformer (planned).

Most reason for implementing the speech synthesis engine into Klangformer is the Vocoder. So preset speech phrases can be triggered and passed thru the Channel Cross Synthesis of Klangformer to get a singing synthesizer. But also a "virtual lyrics speeker" and all kind of phonetic sound effects are thinkable that way.

More detailled information about the speech synthesizer implementation can be found in this (rich text format) file: speechsynth.rtf

- **How to get AddWave and XGenerator working**

AddWave is Klangformers mechanism to generate additive synthesis waveforms.
XGenerator simply generates raw digital waveform functions with any shape.

As you know, Klangformer has additional to the (fixed) analog oscillators 64 additional (fixed) digital waveforms.
But there are also 4 slots (on each of the 8 channels) for user definable waveforms , which can be created easily on demand with the mouse.

Inside the AddWave (A) editor you draw in fourier (sine partials). Because this is not so easy to understand, the resulting waveform is also displayed inplace in realtime. You can create 2 additional Waveforms with additive synthesis and 2 waveforms with the XGenerator (raw waveform generator) for each of the 8 channels of the synthesizer. This are in sum 32 additional user defined waveforms for multitimbre playing.

The clou is, that those waveforms can be used as oscillators and also assigned to the 3 extended LFOs, which also support envelope-trigger mode. Due the LFO's capability of tempo synchronisation, those waveforms (especcially the free drawn XGenerator shapes) can be used to create time dependant rhythmic modulations like trance gates, synced lopping sweepes and all kind of other crazy stuff.
Thereby any of the continuous modulation destinations can be assigned (pan, pitch, filter, fm and so on...).

Inside the waveform popup menus you will find those 4 extra waveforms for assignment (the 4 last waves). With the very easy to use graphical editors (X and A), you can "draw" those waveforms.

The binary tables for AddWave and XGenerator will be saved automatically with the sounds and inside the main sound bank, but can also be ex- and imported from and to disk at any time (for creating several presets). Those table files are shareble, so please assign useful names on storing.

In connection with endless complex modulation matrix and the internal sequencer/arpeggiator of Klangformer, there are unbelieveble possibilities for magic movin sounds inside Klangformer.

- **How to get XWave working**

XWave is the native soundfont format for Klangformer.
Many VST instruments provide you with the ability of loading *.wav files and pass it thru the synthesis engines.
Klangformer goes a step further and allows you to load entire soundfonts (special collections of key-mapped soundfiles). The format is standardized, but Klangformer uses merely a subset of the strandad described here.

Klangformer **don't use** the widely used *.sf2 (SoundBlaster specific format), but DLS format, which is the official format of the MIMA (MIDI Manufacturer Association). To say exactly: a subset of the DLS2 specification. We find, his format is much easier to understand, more powerfull and also very good extendable (and finally not owned by a specific manufacturer).

The DLS2 Files to use with Klangformer must fit the following base requirements:
- the keymaps have to be melodic keymaps up to a maximum of 128 ranges (areas) per soundfont.
- only one single patch must reside inside such a *.dls file.
- klangformer currently ignores DLS drum maps, because it uses simply melodic maps for the drum sets.
- overlapped ranges or layers are not allowed (layering is applied inside the Klangformer engine in a special way).
- the wave files must be uncompressed **mono** samples with 16bit encoding, native Windows *.wav format.
- best quality and authentic sound is guaranted with 44.1 kHz samples and many small ranges.
- stereo soundfonts have to be split into two monophonic soundfonts (one for left and one for right channel).
- articulation data is completely ignored, because applied by Klangformer internally (the articulation data specification of DLS files is not compatible with the complex internal architecture of Klangformer).
- the samples must be properly tuned (currently no pitch correction factors inside the soundfonts are considered).

You can create or edit DLS soundfonts with several free and commercial tools. We recommend to use Microsofts® DirectMusicProducer© to create and edit those files. The package is freeley available as a part of the DirectX Media development

kit. Also several commercial SF2 to DLS converters may be available to create and edit Klangformer soundfonts. But we cannot guarant compatibility in those cases.

Klangformer soundfonts are not directly (freely) loadeble, but must be placed into a special folder. The path is <Windows Directory>\KFData\XWave\.
Also the naming convention must be considered exactly. Currently are up to 128 different XWave soundfonts supported, where the fonts 096.dls to 127.dls are free usable for user soundfonts. All the other file numbers should be
reserved to a set of several Klangformer standard soundfonts (i.e. Stereo Grand Piano uses 000.dls and 001.dls).
This way Klangformer composers can exchange compositions using a set of standard soundfonts without changing their standard soundfonts sets.

The set of standard klangformer soundfonts wit extraordinary sonic qualities will be accessible for all registered users via online download for free.

- **How to get the Channel Cross Synthesis to work**

Channel Cross Synthesis or simply the Vocoder is the 128 band FFT / IFFT synthesis algorithm on Klangformer.
You can imagine it as an special spectral effect, which works partwise with the multitimbre feature of the synthesizer. It performs a complete frequency analysis, synthesis, resynthesis in realtime.

The single bands of the frequency spectrum can be drawn with the mouse inside the V editor of Klangformer. Each stereo channel has its own frequency band editor.

There are several different possibilities with this unique Klangformer unit.
- At first it can be used as a classical Vocoder. If we pass speek from the speech synthesizer on channel 1 thru the FFT engine and crossmodulate it with the spectral content of a synthesizer voice on any other channel, so we get a singing synthesizer or all other kinds of crazy synthesized spoken sound. Also very cool, when applied to drum tracks.
- At second, it can be used as 128 band spectral filter with the ability of spectral shifting. This means we can continuous move the entire spectal content of the synthesized sound and wrap it arround.
- And last but not least, the FFT engine is able to shift (or better scale) the pitch of the sound. which may be also very effectful on drums and percussion tracks played by Klangformer (without affecting the signal durations) or even any other internal synthesized signal.

The entire FFT / IFFT effect unit works in mono and/or in stereo.

But there are many other things thinkable too. For example one could play a Grand Piano on channel 1 and crossmodulate it with a space choir. The FFT filter could be used to remove some bands completely from a voice and so on. If you use it as a classical vocoder, the frequency bands can be adjusted and the entire spectrum can be shifted in realtime additionally to the cross modulation off the frequencies

and their corresponding amplitudes.

Please note, that for performance reasons only one stereo vocoder is possible per single Klangformer instance. Currently you cannot route more than one channel pair thru the Channel Cross Synthesis.

Here some examples and a short discription how to achieve those results:

...to be continued ...

What is new in Klangformer 2

- sound quality improved (new antialiasing filters and numerous internal sound improvements - too much to count here).
- new additive wave generator AddWave implemented. It is now possible to generate user defined waveforms from the scratch. You simply draw up to 128 partials in the additive wave editor and pass it thru the synthesis engine of Klangformer like usually.
- Configurable Sequencer / Arpeggiator now improved. Create your own arpeggios and phrases simply with the mouse. This system includes also a step less groove shuffle control. Arpeggios are derived from the step sequencer directly.
- XWave lite implemented. XWave is the (external) soundfont implementation for Klangformer. It allows you to access the new "real instrument" patches from the external sound library and pass it thru the Klangformer sound engine. Some extraordinary example patches included (i.e. a sweet Grand Piano). Note, that Klangformer soundfonts require a special format.
- full access to the huge XWave soundfont library via online downloader for all registered users.
- XGenerator implemented. This is a new modulation source generator for creating curves with the mouse on the fly, which can be used for the advanced LFO/Envelope section of Klangformer. You can imagine the XGenerator as a draw-able "trance gate" like step modulator with 128 fixed time slices, which can modulate all thinkable modulation destinations directly or via the extended modulation matrix. This is sync-able to the hosts tempo, of course.
- Channel Cross Synthesis (FFT/IFFT synthesis). This new effect works with the multi-timbre feature of Klangformer. You can cross-synthesize two of the eight audio channels and perform spectral channel cross synthesis (vocoding). This includes dynamic spectral filtering in stereo.
- Speech Synthesizer adopted. We have implemented one of the best diphone speech synthesis engines available. You can even edit the durations and the pitch of the speech synthesis to make Klangformer "singing". This special addition is thought for use with Klangformer's vocoder, which has an special "speech mode" for very good comprehensibility. You can create astonishing vocal sound effects whit this combination. The speech synthesizer comes with a German diphone database by default.

Klangformer V2
sound engine

[system requirement: at least Athlon 1000 / Pentium4]
recommended host application: CubaseVST

DEFINITION OF POWER
Some considerations to the performance of Klangformer:

Klangformer offers you an undreamt-ofly new dimension of virtual analog and hybrid sound synthesis.
Forget all you have heard about the "equal" sound of VA synthesizers.
Unique in concept and sound character, Klangformer is like a scream in the VST jungle, blowing away the average.

1st The Oscillators (morphing oscillators):
Klangformer has 3 main oscillators and additional 1 sub-oscillator per single playing note. This still would be nothing special now. But these oscillators aren't common oscillators as you will hear.
Each of the 3 main oscillators of Klangformer consists actually of a mixture of 2 from 3 single partial oscillators internally. One main oscillator can continuously mix 2 of 3 different wave forms together in real-time, including wave morphing, pulse width stretching, linear frequency modulation and oscillator synchronisation. Well, this means in the plain text that with all 3 main oscillators at least 6 oscillators are altogether simultaneous in business with one MIDI note playing.

Noise generator, the ring modulator as well as the sub oscillator still join for this one extra.
If you switch to twice-unison voices, this power will be DOUBLED without reducing the polyphony!

2nd The Filters (connectable morphing filters):
Klangformer has not only 1 multi mode (state variable) stereo filter, but 2 (the processing architecture needs in fact 3 processing stereo filter units at same time) high quality filters with each a maximum of 6 poles (= maximal 36db/octave per filter unit). These filters can additional to its serial/parallel/split connection also be mixed and faded together in real time continuous.

An extra stereo saturation unit per tone (yes - per single note!) in addition still lies behind the first filter with different possible curves and special effects on filter stage for an extra sonic drive.

3rd The polyphonic Modulation Matrix:
Klangformer has additional to the 5 standard Modulators (3LFO's and 2 Envelopes with multiple modulation destinations) an advanced extra modulation matrix with up to 9 additional modulation destinations per voice simultaneously. These Modulators can be cross wired. Unlike on most other synthesizers many of the modulators are polyphonic

too. For instance the LFOs are all polyphonic!

4th The independent Channel Effect Engines:
Klangformer has no global effects, like most other today's synthesizers, but one independent stereo effect engine for each of his 8 synthesizers/channels.

These are then 8 * 6 = **48 stereo (= 96 channel effects)** altogether at a serial connection of Analog Boost, Distortion, Chorus, Multi Stage Phaser, Delay and an extra high quality Reverb.

With Klangformer well you don't have only 1, but 8 full featured enormous powerful stereo synthesizers running simultaneously.

If you everything adds up once, it can happen that 600 and more modules are active simultaneously in one session! And this isn't the end the possibilities of klangformer, but perhaps the end of your processor power!?
It is obviously the price for one of the best sounding free software synthesizers ever.

This should be conscious to you, if you look at Klangformer's performance.



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Klangformer SE, 1, 2,
high definition sonic workstation
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Overview

- full featured VST 2.3 compilation
  (we support all fully CubaseVST® compliant host applications)

- extreme complex virtual digilog/anatal hybrid synthesizer
- extraordinary native high quality sound engine
- vector based (morphing) synthesis architecture
- 8 x multi timbre, 24 voices polyphony
  (8 independent synthesizers mapped to MIDI channels)
- 8 stereo output channels
- real stereo processing architecture
- parameter smoothing, anti distortion technology
- advanced MIDI and SYSEX implementation
- sound bank with 1024 professional preset voices inclusive
- independent stereo effect processing per synthesizer channel
- integrated polyphonic phrase sequencer/arpeggiator per channel
- quick help and context sensitive help system
- performance/render mode quality switch
- supports additional its own external sound bank format with 1024 patches

Main features

Oscillators
- 3 x three stage- morphing main oscillators (main/slave, additional) per voice
- 1 extra sub oscillator
- conventional analog waves + 64 additive waveforms
- additive wave generator for user generated waveforms
- frequency modulation, pulse width modulation, oscillator synchronization with all waveforms
  (all at same time possible)
- ring modulator and noise generator with adjustable noise color and amount
- twice unison mode without reducing the polyphony
- several poly, mono, legato and combination key modes

Filters
- 2(3) serial/parallel/split real time morphing analog modeling filters
- 4/3/2 pole low pass, high pass, band pass, band stop filters in any combination and relationship
- filter resonance up to self oscillation
- embedded polyphonic saturation and effect unit between filters with 8 different algorithms

LFOs/Envelopes
- 3 advanced shape morphing low frequency oscillators with tempo sync
- each of the additive wave forms usable for LFOs
- 2 assignable envelopes with additional sustain rise/fall time feature
- multiple assignable to the many modulation destinations

Modulation Matrix
- advanced 9 stage modulation matrix with more than hundred assignable sources and destinations

- each conceivable combination, cross wire and multiple assignment possible
- XGenerator for owner draw able modulation curves (only version 2)

Effects
- advanced independent stereophonic effect section for each voice/channel
- final distortion unit with different analog and digital drive curves
- analog booster and punch adjustment
- stereo chorus/flanger per
- multi stage phaser per
- stereo delay and hq reverb per channel/voice

MIDI
- all parameters controllable via MIDI and/or SYSEX control (requires host support)
- full controller implementation incl. note- off velocity, aftertouch (channel pressure), sustain (hold) pedal and so on...
- extended MIDI implementation (more than 128 standard controllers)
- freely assignable via modulation matrix
- extended SysEx export features
- Phrase Sequencer can be recorded to MIDI tracks
- pitch bend scale up to 64 semitones with bi-directional different amounts

GUI
- simple to use multi page view with integrated help displays
- new animated GUI controls combining bitmap and vector graphics
- context sensitive external help system
- many activity indicators, i.e. oscilloscope
- remote MIDI control watch and translation displays

... and much, much more ...

[system requirement: Athlon 1000 / Pentium4]



Klangformer version 2
Distribution Information:

Klangformer 2 is under development not public distributed.

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