
# ‘Abakos PRO’
# VST Instrument Instruction Manual



***What is Abakos PRO?***

Abakos PRO is a VST software synthesizer that will work in VST compatible hosts like Cubase, FL Studio, Tracktion, Energy XT and many others.

*Abakos PRO* is the commercial successor to *Abakos FREE*. It builds on the original by including many extra features for musicians, while still retaining the simplicity of the original design.

You can read more about the history of the HERCs synthesis project by visiting our Website: www.hercsmusicsystems.com

***Will my Computer be able to run it OK?***

Minimum system requirements:

- Processor Intel Pentium II or AMD Duron
- Microsoft Windows 98/NT/2000/XP operating system

Recommended system requirements:

- Processor Intel Pentium 4 or AMD AthlonXP or 64 Bit
- Microsoft Windows XP operating system

Please be aware that HERCs Abakos PRO will use a reasonable amount of CPU. Older computers may struggle to run multiple instances of Abakos PRO. The HERCs synthesis engine produces high quality sound and the sacrifice for this quality is some of your computers CPU. But on modern, fast machines, we have found that Abakos PRO will run smoothly and with few problems.
We believe in using the power of modern computers to power our products.

### *How do I install this?*

Assuming that you have just downloaded the compressed zip file containing the HERCs Abakos PRO files, you will first need to unzip it to a folder with an appropriate decompression program like WinZip.

Now, just locate your VST instruments directory on your computer and drag and drop the HERCs Abakos PRO folder into the directory. Your VST hosts then should be able to scan and find it.

### *Text Files Everywhere !*

If you dig into the directory folder where you installed Abakos PRO you will soon notice that apart from binaries there are literally hundreds of text files everywhere. They store configuration information and preset sounds. Every time you store your preset a text file is created or modified. Every time you select a preset sound, a text file is read by the HERCs core.
Now, you may be pleased to know that you can edit them using a simple Text Editor. However, before you do so, please make a safety copy.

Here is something else interesting…
Every HERCs synthesizer understands these preset files. As a result you can freely exchange those files between different HERCs virtual instruments. Yes, we know it seems unbelievable, but you can swap files between any of our synthesizers and they will sound identical! The only difference will be that the GUI on your screen may work a little oddly ! Imagine importing a VA stored preset into a HERCs FM synth and trying to use the FM buttons to control analogue values ! Ouch…weird fun…

### *The Benefits of Text*

You may be wondering, why everything is stored in a text file? Here are some benefits:

1. Text files are easy to edit.
2. Text files can be created by hand without any sophisticated software.
3. All CONFIG changes can be done by hand.
4. You can easily install a new preset sound from someone else. Simply copy and paste text files.
5. They are very familiar to computer users everywhere !

### *Presets and Text files*

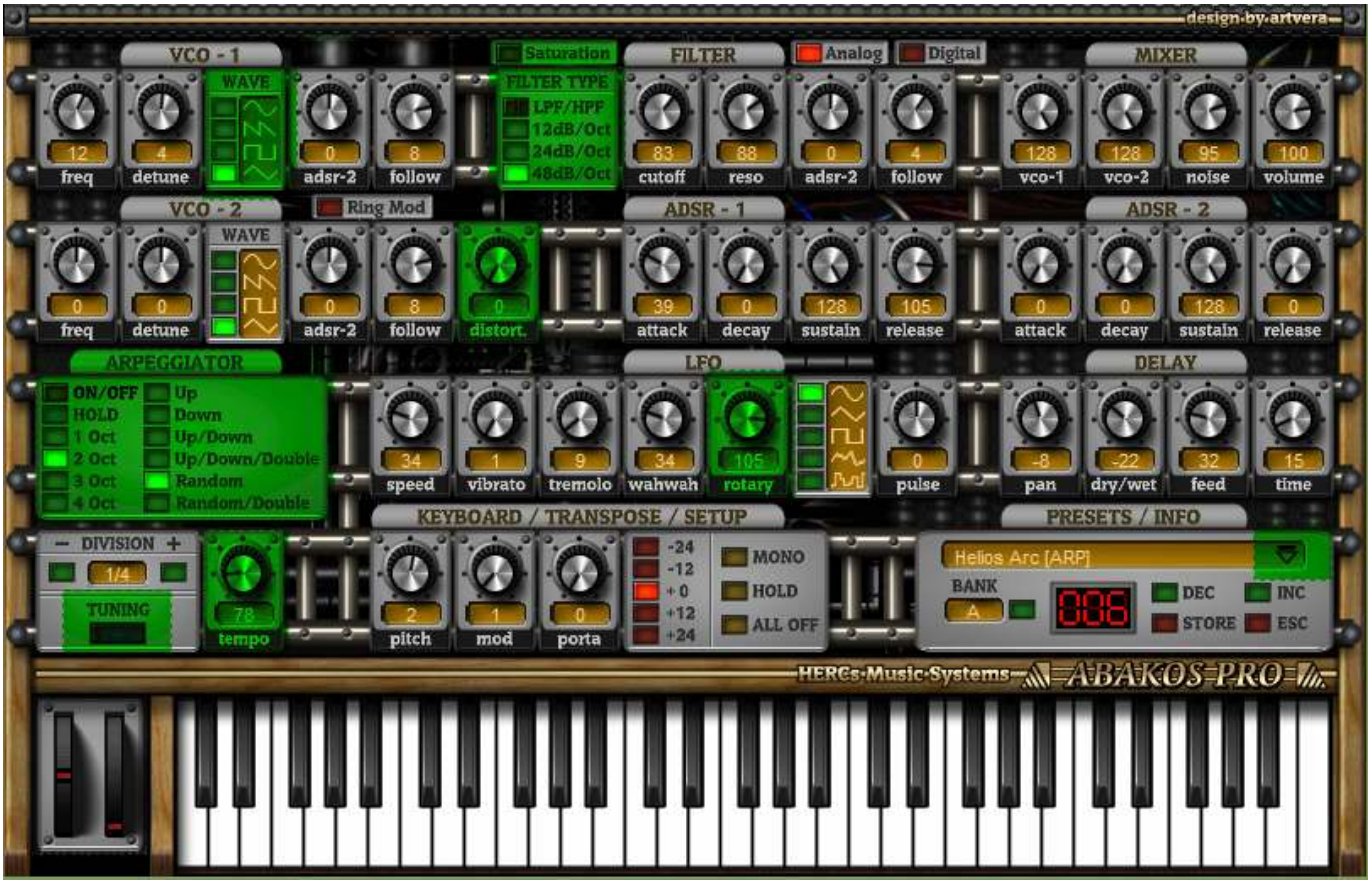
…and just while we are on the subject of Text files, we want to present to you a definitive table of how the preset numbers relate to the text file presets you will find in the Bank directories:

| File Association Table | | | |
|---|---|---|---|
| 000 => 00.txt | 032 => 20.txt | 064 => 40.txt | 096 => 60.txt |
| 001 => 01.txt | 033 => 21.txt | 065 => 41.txt | 097 => 61.txt |
| 002 => 02.txt | 034 => 22.txt | 066 => 42.txt | 098 => 62.txt |
| 003 => 03.txt | 035 => 23.txt | 067 => 43.txt | 099 => 63.txt |
| 004 => 04.txt | 036 => 24.txt | 068 => 44.txt | 100 => 64.txt |
| 005 => 05.txt | 037 => 25.txt | 069 => 45.txt | 101 => 65.txt |
| 006 => 06.txt | 038 => 26.txt | 070 => 46.txt | 102 => 66.txt |
| 007 => 07.txt | 039 => 27.txt | 071 => 47.txt | 103 => 67.txt |
| 008 => 08.txt | 040 => 28.txt | 072 => 48.txt | 104 => 68.txt |
| 009 => 09.txt | 041 => 29.txt | 073 => 49.txt | 105 => 69.txt |
| 010 => 0A.txt | 042 => 2A.txt | 074 => 4A.txt | 106 => 6A.txt |
| 011 => 0B.txt | 043 => 2B.txt | 075 => 4B.txt | 107 => 6B.txt |
| 012 => 0C.txt | 044 => 2C.txt | 076 => 4C.txt | 108 => 6C.txt |
| 013 => 0D.txt | 045 => 2D.txt | 077 => 4D.txt | 109 => 6D.txt |
| 014 => 0E.txt | 046 => 2E.txt | 078 => 4E.txt | 110 => 6E.txt |
| 015 => 0F.txt | 047 => 2F.txt | 079 => 4F.txt | 111 => 6F.txt |
| 016 => 10.txt | 048 => 30.txt | 080 => 50.txt | 112 => 70.txt |
| 017 => 11.txt | 049 => 31.txt | 081 => 51.txt | 113 => 71.txt |
| 018 => 12.txt | 050 => 32.txt | 082 => 52.txt | 114 => 72.txt |
| 019 => 13.txt | 051 => 33.txt | 083 => 53.txt | 115 => 73.txt |
| 020 => 14.txt | 052 => 34.txt | 084 => 54.txt | 116 => 74.txt |
| 021 => 15.txt | 053 => 35.txt | 085 => 55.txt | 117 => 75.txt |
| 022 => 16.txt | 054 => 36.txt | 086 => 56.txt | 118 => 76.txt |
| 023 => 17.txt | 055 => 37.txt | 087 => 57.txt | 119 => 77.txt |
| 024 => 18.txt | 056 => 38.txt | 088 => 58.txt | 120 => 78.txt |
| 025 => 19.txt | 057 => 39.txt | 089 => 59.txt | 121 => 79.txt |
| 026 => 1A.txt | 058 => 3A.txt | 090 => 5A.txt | 122 => 7A.txt |
| 027 => 1B.txt | 059 => 3B.txt | 091 => 5B.txt | 123 => 7B.txt |
| 028 => 1C.txt | 060 => 3C.txt | 092 => 5C.txt | 124 => 7C.txt |
| 029 => 1D.txt | 061 => 3D.txt | 093 => 5D.txt | 125 => 7D.txt |
| 030 => 1E.txt | 062 => 3E.txt | 094 => 5E.txt | 126 => 7E.txt |
| 031 => 1F.txt | 063 => 3F.txt | 095 => 5F.txt | 127 => 7F.txt |

### *Credits*

HERCs Music Systems would like to thank Vera Kinter, www.artvera-music.com, for her fantastic interface design for Abakos PRO.

She designed the original interface of Abakos FREE and we decided to continue the tradition !We would also like to thank Vera for her patience and presets.




***New Features You will find in Abakos PRO***

Abakos PRO is a distinct improvement upon Abakos FREE. As you can see above, we have highlighted in green, several new features.

- **Arpeggiator :** The Arp function is a lot of fun. You can use it to create some interesting note runs and basslines. Try holding a chord with the Arp on. Play with the Tempo control to make it faster or slower. Try the Division buttons to control the Arp even further. And just for the fun of it, try longer envelopes with ADSR 1 to create some unusual Arp patterns.
- **Tuning :** We have fitted out Abakos PRO with full support for the TUN (Tuning) file type. This means that micro-tonal enthusiasts can simply click the 'Tuning' button to load up their favourite scale (the preset 'Xeno Chimes' uses a Xenakis scale). And if you store a preset, its scale is also stored ! Neat huh ? We love it anyway ☺
- **Waveform :** We have included a Triangle waveform in the Oscillator section. This is a very nice foundation for tinkling bell sound structures. The waveforms are now also cleaner and clearer in Abakos PRO.
- **Distortion :** The brand new Distortion unit adds some *BiT-ReDuCed* grit to your sounds. At extreme values it mangles the sound into a stupid mess. Don't try it around parents.
- **Filter :** We have improved the filter. The Saturation button will open the filter up to some ear blasting self oscillation effects. We suggest turning the volume down before trying this out at first ! It can create some very otherworldly noises. Push it too hard and it might actually eat your brain. Our improved Filter module also contains Low Pass and High Pass types tied to 12db, 24db and 48db/Octave filters.
- **Rotary :** We also thought it was a good idea to add a new effect. Twisting the Rotary knob will give you LFO→PAN goodness. Try it…we know you'll like it.
- **Preset Module :** And last but not least….a section we wanted to improve for all users. Our new preset panel works differently. When you click the small triangle to the right of the panel, you will see a pop-up box filled with all of the preset names in that Bank. Just select and go ! Easy and nice, just the way we like it.

***So, how can I make sounds?***

## Playing Notes

To play Abakos PRO an external MIDI keyboard is recommended. However, in some cases, using an external keyboard may be impractical or simply impossible (i.e. MIDI interface is not present). In such cases you can easily play some notes using your computer mouse.

To play a note using your computer mouse simply click somewhere on the keyboard picture.
If you want the sound to play continuously, click the "HOLD" button.
If several notes are playing together and you want to switch them off, click the "ALL OFF" button.
You can also transpose the keyboard using the five transpose buttons: "-24", "-12", "+0", "+12", "+24"

**IMPORTANT INFORMATION!**
Transpose and Hold buttons are not sound parameters and therefore can neither be stored nor automated. They also do not affect the behaviour of any external MIDI keyboard.

## LFO

One of the modules present on most synthesizers is the "Low Frequency Oscillator". Its operation is relatively straight forward and it is controlled by several parameters:

1. **SPEED** determines the speed of the oscillation
2. **VIBRATO** controls the amount of oscillation affecting VCO frequency
3. **TREMOLO** controls the amount of oscillation affecting amplitude
4. **WAH WAH** controls the amount of oscillation affecting filter cutoff frequency
5. **ROTARY** controls the amount of oscillation affecting Pan
6. **WAVE** selects the shape of the oscillation
7. **PULSE** modifies the shape of the oscillation

## Delay

Abakos PRO features a very simple delay effect. However, it is capable of creating very good results. The delay effect is controlled by three parameters:

1. **DRY/WET** determines the balance between original sound and affected sound
2. **FEEDBACK** controls the overall length of the effect
3. **TIME** controls the time between sound reflections

There are two additional parameters controlling the output:
1. **PAN** apart from positioning the sound in 2D space, controls reflections between Left and Right channels
2. **VOLUME** controls the output volume of the synthesizer

## Envelope Generator or ADSR 1 / 2

Like most synthesizers, Abakos PRO has a complete Envelope section with the following parameters:

1. **ATTACK** controls the time necessary for the sound to reach the full volume after pressing a key
2. **DECAY** The time of the extra fade determined by “SUSTAIN” is controlled by the "DECAY" parameter
3. **SUSTAIN** After the sound reaches the maximum level it starts fading to the "SUSTAIN" level
4. **RELEASE** controls the time necessary for the sound to fade out after releasing the key

**Note:** On Abakos PRO there are two Envelope Generators: "ADSR-1" and "ADSR-2". The second one affects frequency of the filter and oscillators instead of controlling the volume.
To apply ADSR-2 to filter or oscillators you have to turn "ADSR-2" knob located on filter of VCO modules.

## Filter

The Abakos PRO filter module consists of several parameters:

1. **CUTOFF** controlling the threshold cutoff frequency.
2. **RESO** controlling the resonance.
3. **SATURATION** turning this on will create a self oscillating filter type.
4. **FOLLOW** which controls the filter's response to the keyboard.
5. **ADSR-2** controlling the amount of Envelope signal applied to the cutoff frequency.
6. **MODE** this is switch-able between Digital and Analogue filter states. When the Mode button is off (dull red) it is in Digital mode. When the Mode button is On (bright red) it is in Analogue Mode. The Digital filter mode features a slightly harder sound while the Analogue filter mode is a little smoother.
7. **LP/HP** This section controls the Low Pass and High Pass filter types.

By turning the "CUTOFF" knob you can make the sound "brighter" or "duller".
If you are not satisfied with the effect, simply apply more resonance using "RESO" knob.

The "FOLLOW" knob is especially useful when you want to control noise with keyboard (remember to set "RESO" knob to at least 120). Setting the "FOLLOW" to 8 causes the cutoff frequency to shift in accordance with keys played. Other settings can produce more dramatic changes to the sound or even reverse them (negative values).

## Oscillators or VCO (Voltage Controlled Oscillators)

1. **WAVE** selects that shape of the oscillation.
2. **PORTA** knob controls portamento time and on Abakos PRO it appears inside the "KEYBOARD" section
3. **FREQ** and **DETUNE** determine the frequency of the oscillation.
4. **FOLLOW** controls the VCO's response to the keyboard (please, observe that in most cases it is set to 8).
5. **ADSR-2** controls the amount of Envelope signal applied to VCO.
6. **RING MOD** engages or disengages the "Ring Modulator" (present only between two VCOs).
7. **EXTERNAL MIXER MODULE** controls the balance between VCO-1, VCO-2, NOISE and overall volume.

### Hints for setting VCO's parameters

If you intend to play high notes, select sine wave. If you intend to play in mid-range or low-range of the keyboard use sawtooth or square waves. Sine waves are hardly audible below 220 Hz while sawtooth and square waves tend to alias at high frequencies.
When you want the sound to appear more "artificial" or "synthetic" use square wave. If your intention is to achieve more "realistic" or "natural" effect, use sawtooth wave. For emulating sounds of nature (i.e. sea waves, winds, etc.) use noise instead of a VCO signal.
To achieve mechanical or metallic sounds (like various bells, various engines) engage "Ring Modulator". Please note, that you will hear silence, if one of the VCO is muted on the "Mixer" section.
To achieve string sounds, mix the two VCOs at slightly detuned frequencies.
8. Pitch and Modulation Wheels

1. **PITCH WHEEL** shifts the frequency up or down.
2. **MODULATION WHEEL** applies vibrato effect.
3. **PITCH KNOB** controls how much the "pitch wheel" can shifts the frequency.
4. **MODULATION KNOB** controls how much vibrato you can apply using "modulation wheel"

### *Configuring Abakos PRO*

If you dig around in the HERCs Abakos PRO directory, you will come across a teeny file called config.exe. If you double click this, you get access to a number of internal parameters that affect the behaviour of the instrument.

Most of it should be self explanatory. Increase the ***Polyphony*** to jack up the number of notes you can play at one time…turn it down to do the opposite. Increasing it will eat some CPU of course so watch it.

***Headroom*** will affect the global volume of the instrument. So turning it up will give you more sound juice.

The ***Oversampling*** function will affect the internal oversampling module in HERCs. The default value is always 1x, but if you want to improve the sound of Abakos PRO, you will probably want to increase the Oversampling rate. Please bear in mind that every multiplication will increase CPU eating accordingly.

### *A Few Words about Tuning files*

While you're digging around the Abakos PRO directory you will also come across a 'Tuning Files' sub directory. We have filled this with a host of sweet sounding TUN files. For the Micro-Tonally inclined amongst you, we've no doubt you'll want to score a few more of these files, so go to our website and grab the whole bag.

These are all TUN files converted from the original SCALA file archive, freely downloadable from here:
http://www.xs4all.nl/~huygensf/scala/

### *What are you waiting for?*

We hope that you have found this instruction manual useful and interesting. There are a lot of different sounds that can be made with Abakos PRO and just when you think you have explored every aspect of its sound capabilities, you will suddenly discover more!

We try to make our software as stable and bug free as possible, but the nature of software and systems is that they can be a little fuzzy at times ! If you have any problems with Abakos PRO, please get in touch with us and let us know. We are always trying to make our products better and more interesting.

If you have any feedback or any thoughts on how our instruments can be improved, feel free to get in touch.

All contact details can be found on our website:

www.hercsmusicsystems.com