A complete guide to
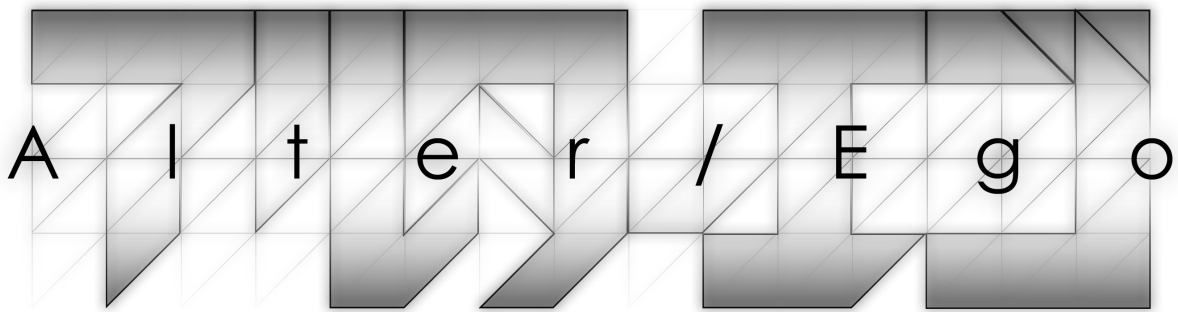
Alter/Ego

Manual v1.077

About Alter/Ego

Updating to the Latest Version

Be sure to check the Plogue Web sites for any possible updates that have occurred since the time your version of the software was released. Software is frequently updated and a more recent version may be available.

Getting Help

The first place to look for a solution to any problem you may be experiencing is in this manual. Please read the manual before contacting support. Next, check the readme files (if any) which contain important information and all last-minute changes that haven't been available when creating this guide.

The Plogue Alter/Ego Player and sounds are dynamic — evolving and growing. Please check the support area of our website at www.Plogue.com for the latest up-to-date information products, troubleshooting, FAQs, helpful hints and tutorials. Another resource is the support forums.

Whenever you encounter problems, you should also check if you have installed the latest updates. The version number of your software is displayed in the **About** dialog. Updates are released regularly to fix known problems and to improve the software.

If you can't find a solution to your problem please email us at alterego.support@plogue.com. The best way to get the help you need is by giving us plenty of detailed information about the problem you are having. We do ask you to read this guide thoroughly and exhaust the other avenues of support before contacting us.

The Plogue forum can be accessed at: http://www.plogue.com/phpBB3/

You don't have to register to browse posts, but before you can post, you will have to sign up.

End User License Agreement

See Licence.rtf, which contains the full license agreement.

About this Manual

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Alter/Ego Quick Usage Guide

Using Alter/Ego

- Enable full keyboard input. You will need this to type in your lyrics!

- Chose a voice and edit its parameters to your liking in the *Controls* tab. You will also find more advanced parameters in the *Modulation* tab. See the 'Parameter Reference' section.

- Type the lyrics to your song in the *Words* tab.

- Play in the melody.

- Enjoy!

Activating full keyboard input

Many plug-in hosts will intercept key strokes before they get to plug-ins, and have an "enable keyboard input" option to disable this feature. Since Alter/Ego is based around text input, you will probably need activate this option.

Host	Location
Modplug	Plugin window menu: Options->Pass Keys to Plugin
Reaper	Right-click the plug-in instance, check "Send all keyboard input to plug-in" option
Renoise	Bottom of plug-in window: "Enable keyboard" button
Sonar	Top of plug-in window: Keyboard shaped button

Controlling the playback cursor

Plogue Alter/Ego keeps a cursor in the text, and advances by one syllable for each MIDI note. Because the song can be played starting from any position, the text cursor may end up getting out of sync with the song.

- Midi CC2 will set the cursor to a text line. For instance, if Alter/Ego receives CC2 value 57, the text cursor will be set at the beginning of line 57 for the next note.
- Midi patch change will do the same thing as CC2 (provided for convenience for some Midi controllers).
- Key switches (low notes from 0 to 23) will trigger lines 0 to 23. (higher lines cannot be triggered with key switches)
- Editing or selecting a text line will do the same, and set the next playback start position to that line as well.
- Every time playback is reset, the text cursor will restart at the last edited text line.
- Midi CC3 will set the playback cursor within the current line.

English text input

Plogue Alter/Ego contains an English phonetic dictionary (CMUDict) and will automatically generate a pronunciation for any English text that you type in. Furthermore, it will try to guess the pronunciation of unknown words. All you have to do is to type in the lyrics in the *Words* tab.

- The copy/paste/undo buttons apply to the *whole song*. They let you import and export your lyrics to other programs. The "undo" button only works for a single undo step.
- Copy/paste/undo keyboard shortcuts (Ctrl+C/V/Z) only apply to the *currently edited line*.
- If you don't like the pronunciation of a word (for instance, you need the 3 syllable ev-e-ry instead of the default 2 syllable eve-ry), the pronunciation can be edited in X-SAMPA section. X-SAMPA words are shown between brackets in the English section - for instance, 3 syllable ev-e-ry will be shown as [E v@ ri.
- Periods (".") will be translated into pauses ([#] in X-SAMPA).
- Words can be extended into multiple syllables by the use of dashes ("-"). Example: the word "che-e-eck" will be translated as [tSE E Ek] in X-SAMPA (plays over 3 syllable instead of one).
- Alter/Ego also features limited Japanese support: hiragana and katakana text will be translated into the corresponding pronunciations (kanji is not supported though).

Phonetic text input

Alter/Ego uses X-SAMPA for phonetic transcription. This was chosen to eventually allow for multiple language support (unlike Arpabet or Votox), and to remove the need for non-ASCII character support (which is a problem with IPA and Americanist notation). See the Alter/Ego X-Sampa reference for more info.

Adding a Voice Bank

Alter/Ego doesn't come with voices installed.Voice Banks come as separate downloads. You can acess the voice banks web page buy clicking on the **Download Voices** buttonon the Interface.

Voice Bank installation works in the same manner for Mac and PC. A video tutorial has been made with the Mac version:

https://www.youtube.com/watch?v=0Llg1_X0xUo

- Download and unzip the Voice Bank to a location of your choice.

- Open Alter/Ego either as a plogin in your favorite DAW or the standalone

- Find the file ending with b**ank.xml**
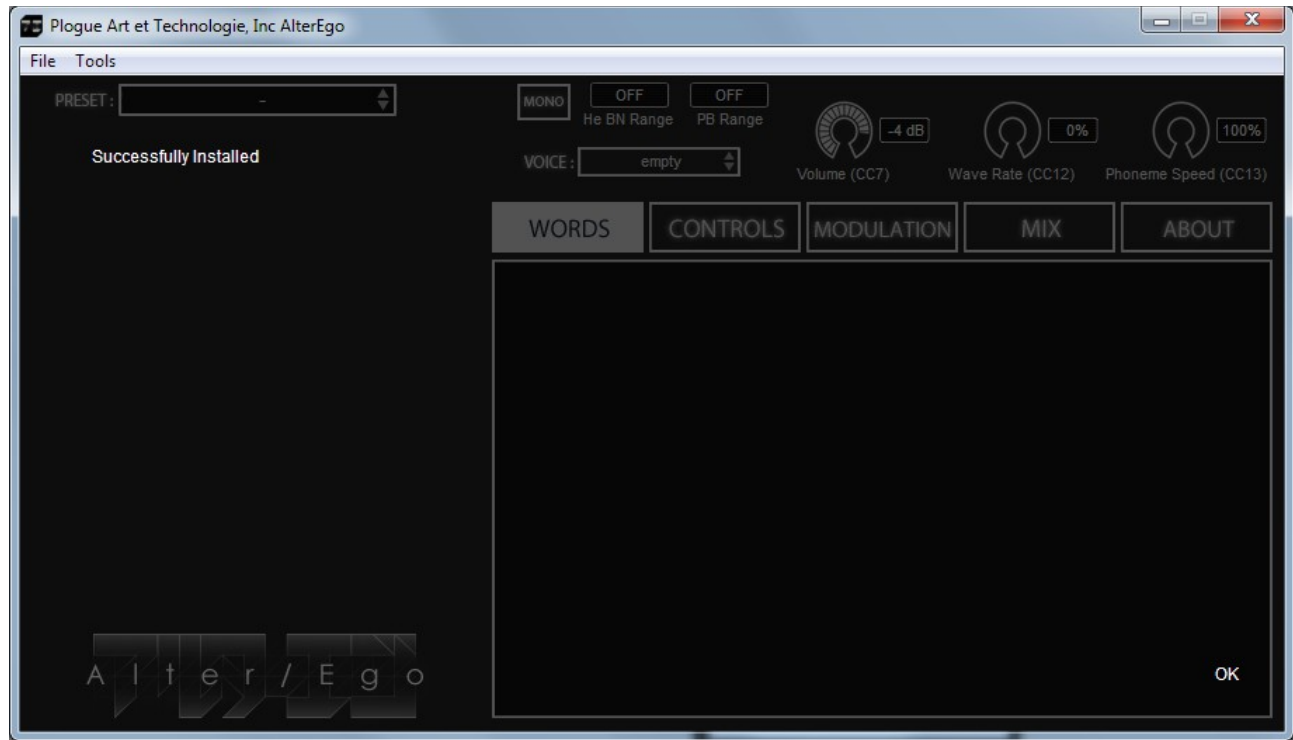
- Drag the *.bank.xml file over Alter/Ego's interface.
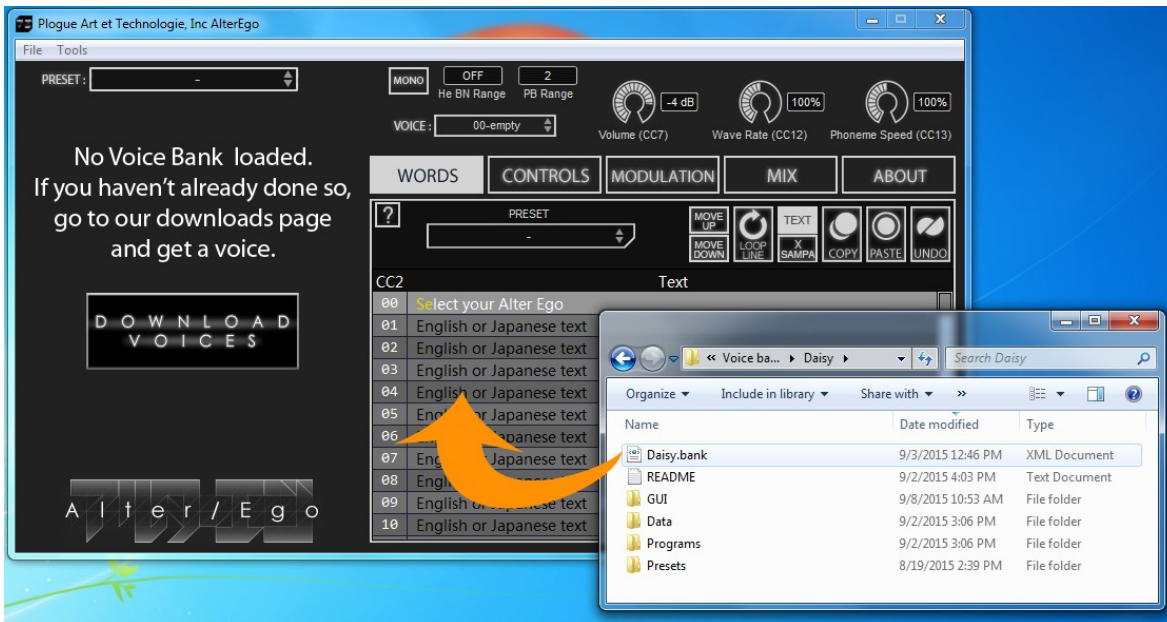
You will be asked in enter you admin credentials:
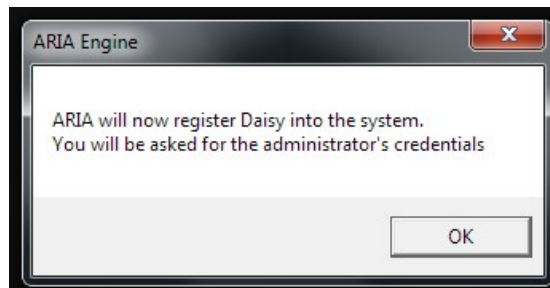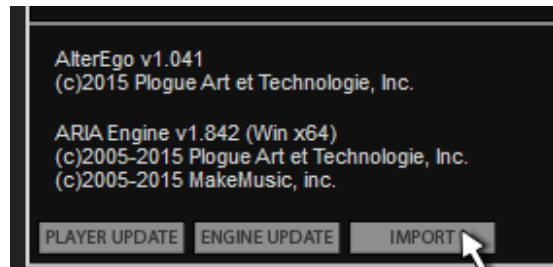
Once your password is entered, you're ready to make Alter/Ego sing! Click OK and start loading/editing presets.

Alternate Import Method: The Import Button

At the bottom of the About tab is an **Import** button. Using this button will open a dialog so you can locate the bank.xlm file to import a Voice Bank.

Parameter Reference

Global Parameters

A- Preset : Snapshots are "Master Programs", complete setups with a "snapshot" of the current sate of the system at the moment of saving, including parameter values, MIDI controls and lyrics. You can save any number of snapshots into your user folder and even create sub-folders, which will mimic the structure of the the default programs. Snapshots have the .ariax extension.

B- Voice : Lets you select which voice to use.

C- Mono/Poly : Switches between single voice (lets you play legatos) and multiple voices (lets you play chords).

D- Helium / Sample Rate Bend Range : Maximum amount of effect the MIDI pitch bender has on the voice resonant frequencies (formants), in semitones.

E- Pitch Bend Range : Maximum amount of effect the MIDI pitch bender has on the pitch, in semitones.

**F- Volume :** Overall volume level of the voice.

G- Wave Rate : How fast the voice plays (transitions from each consonant/vowel to the next). Adding 25% will double the speed of the whole voice synthesizer.

H- Phoneme Speed : Changes how fast each vowel transition is played, without changing the overall playback rate.

Trick!
You could be tempted to increase Phoneme Speed / Wave rate in higher tempo songs affecting the voice's intelligibility. Please refer to "Making the most out of Alter/Ego in a sequencer" (page18).

The 'Words' Tab
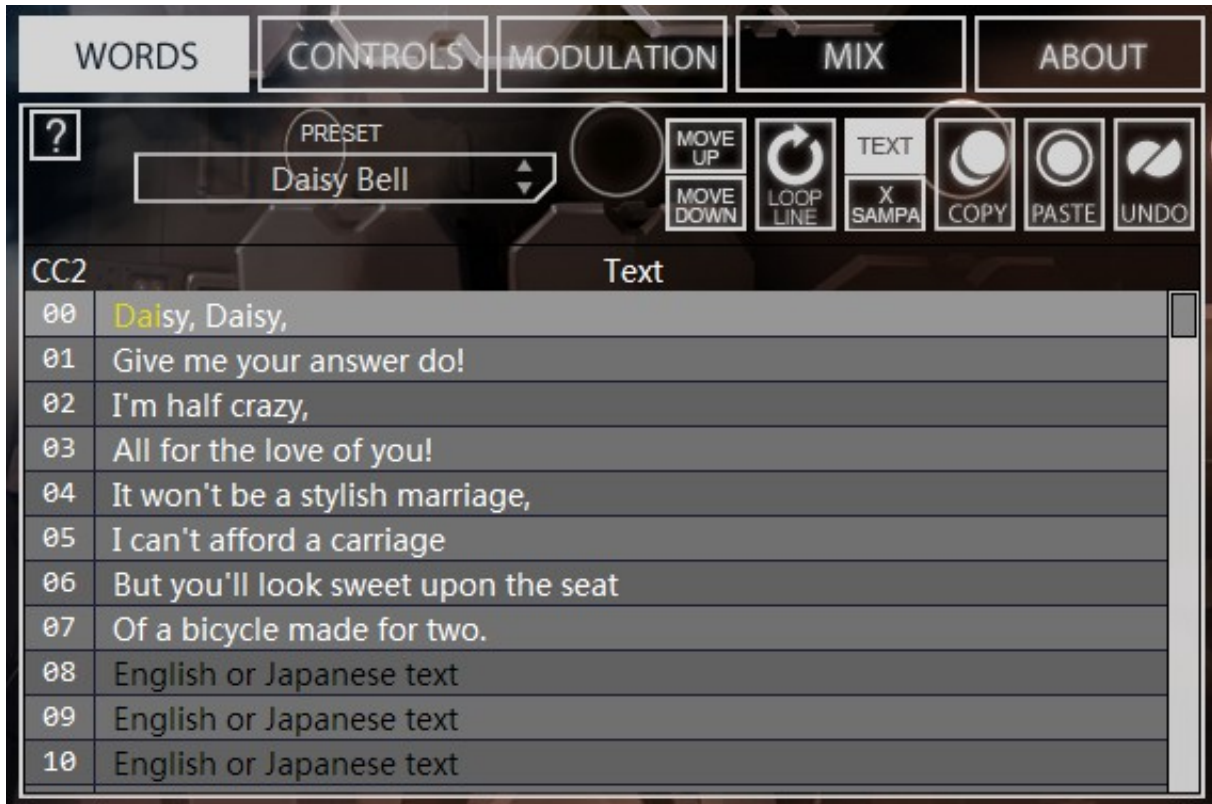
Move Up : Swaps current line and previous one.

Move Down : Swaps current line and next one.

Loop Line : Keep looping the current line instead of advancing through the text. You can automate this using MIDI CC79 or plug-in parameter automation.

Text/X-Sampa : Switch between editing lyrics in English (or Japanese hiragana/katakana) or in phonetic notation (using X-SAMPA - similar to IPA but doesn't require special characters). **SEE APPENDIX FOR FURTHER DETAILS**

Copy All : Copy whole lyrics to clipboard.

Paste All : Paste whole lyrics from clipboard.
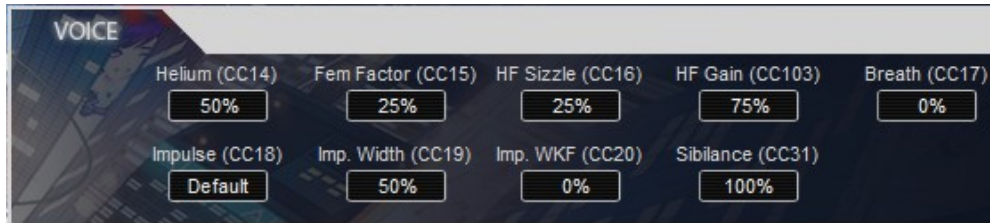
Undo : Undo the last change to the lyrics.

Preset : Load preset lyrics to test your voice settings. You can also save your own presets.

Text : Lyrics sung by Alter/Ego. You can edit the text, or cue a line for the next note. If you click on the line number, the line will also be cued next time playback is restarted.

The 'Controls' Tab

Voice Parameters

Helium : This parameter scales the voice's resonance frequencies (formants). Raising this simulates a smaller mouth, giving rise to the "squirrel effect".

Fem Factor : This parameter modifies the voice's formants to be more male-like or female-like. A setting of 25% gives you the original formants.

HF Sizzle : Controls the amount of top-end harmonics. Stretches the high spectrum to increase coverage.

HF Gain : Controls the amount of top-end harmonics by changing the boosting or cutting high frequency gain.

**Breath :** Controls the amount of noise added into the voice.

Impulse : Select which base waveform is used to simulate vocal cords.

Impulse Width : Controls the stretch factor of the base waveform. On the square waveform, this controls pulse width.

Impulse Width Key Follow : Controls how much the impulse width follows the keyboard. Setting this to 0% will use the same waveform for the whole keyboard. Setting this to 100% will fully scale the waveform as you play higher notes. (no effect on Otto Mozer voice)

Sibilance : Increase or decrease the volume of noisy and sibilant consonants (p, t, k, f, th, s, sh, h).

Stack Parameters
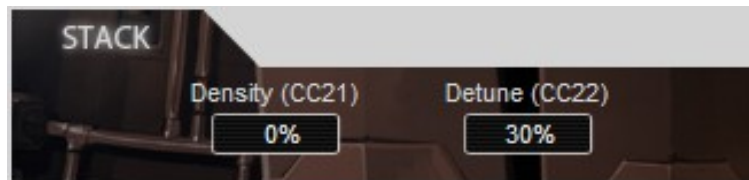
Density : Controls the number of detuned voices in the stack. 0% gives a single voice. 30~50% gives you about two voices. 100% gives you the full 9 voice stack.

Detune : Amount of detuning between the stack voices.

Setup Parameters

Legato : Activates legato mode. Lets you do legatos in the melody without triggering new syllables. (monophonic mode only)

Polyphony : Controls the maximum number of voices in polyphonic mode.

Attack : Controls how fast notes fade in when played. In monophonic mode, only applies to the first note of a group.

Release : Controls how fast the note will decay when released. The release is somewhat different in polyphonic mode.

Rate Key Follow : Controls how much the wave rate scales with the keyboard. 0% is fully pitch independent. 100% will fully scale speed, similar to a sampler.

Octave : Increases/decreases the pitch in octave steps.

Coarse Tune : Increase/decrease the pitch in semitone steps.

Fine Tune : Increase/decrease the pitch in cents.

The 'Modulation' Tab

Vibrato Parameters

MW : Vibrato intensity, as controlled by the Mod Wheel .

Rate : How fast the vibrato is.

Acceleration : How much the vibrato rate increases when the vibrato amount is increased.

Delay : Delay time it takes for the vibrato to start.

Mod Wheel : How much effect the Mod Wheel (Midi CC1) has on vibrato amount.

To Pitch : How much vibrato is applied to pitch.

To Volume : How much vibrato is applied to volume (tremolo).

To Tone : How much vibrato is applied to impulse width (PWM LFO).

To Helium : How much vibrato is applied to helium (formant LFO).

Expression Parameters

Exp : Expression level (MIDI CC11). This controls volume and lets you do crescendos/decrescendos.

Modwheel Amount : Expression level is controlled by CC11. This lets you control the expression level with the Mod Wheel (CC1) as well.

To Volume : How much effect expression has on volume.

To HF Sizzle : How much effect expression has on HF Sizzle / HF Gain.

Siz.>Fmts/Gain : Controls whether expression and velocity are applied on high frequency formant stretching (same as HF Sizzle parameter), or on high frequency gain (same as HF Gain parameter).

Vel to Vol : Controls the amount of effect velocity has on volume.

Vel to WaveRt : Controls the amount of effect velocity has on volume.

Vel to Glide : Controls the amount of effect velocity has on volume.

Vel to Sizzle : Controls the amount of effect velocity has on high frequency formant stretching or high frequency gain.

Humanize and Glide Parameters

Pitch : How much random variation is added to pitch.

Volume : How much random variation is added to volume.

Glide : How fast pitch changes when playing separate notes (triggering new syllables). (Monophonic mode only)

Legato Glide : How fast pitch changes when playing legato notes. In combination with legato mode, this lets you easy simulate voice inflections without using the pitch bender. (Monophonic+Legato mode only)
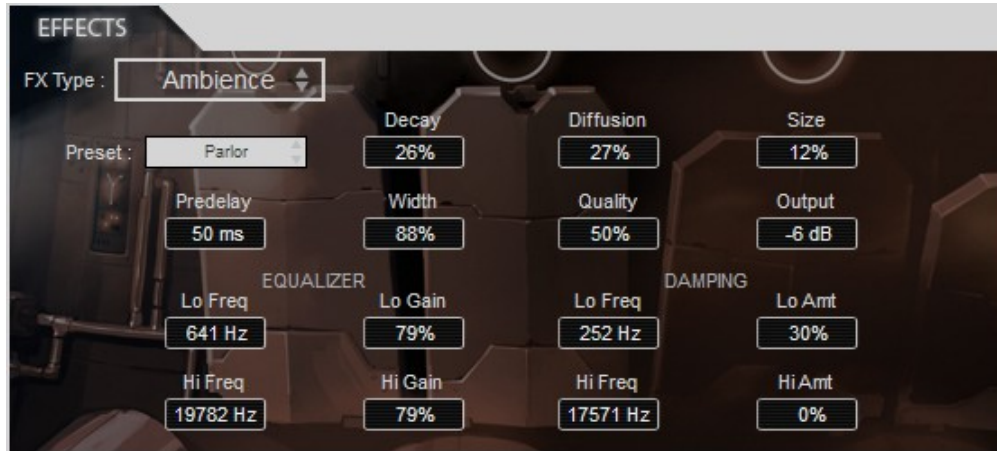
Humanity : Controls the shape of the glide, from highly robotic (0%) to more human-like (100%).

Volume Smooth : Controls whether volume/velocity tone changes happen sharply (0%) or smoothly (100%).

The 'Mix' Tab

FX Type : Selects between the Ambience effect and the Detune effect.

Effect Parameters – Ambience (reverb)

Ambience is a very smooth and flexible stereo reverb effect created by Magnus Jonsson, known mostly for its Ambience VST/AU version. In particular, the decay time can be shaped to different values in the low/mid/high frequency ranges.

Preset : Lets you load reverb settings from a preset.

Decay : How long the reverb decays.

Diffusion : How smooth the decay tail is.

Size : Time between the echos (simulates a small or large room).

Predelay : Amount of delay between the original sound and its reverb tail.

Width : Amount of stereo separation (how different the reverb is on the left vs right side).

Quality : Increases the complexity of the reverb tail, at the cost of requiring more CPU to process.

Output : Volume of reverb.

Equalizer Lo Freq : Frequency under which the low gain is applied.

Equalizer Lo Gain : Gain applied on low frequencies.

Equalizer Hi Freq : Frequency over which the high gain is applied.

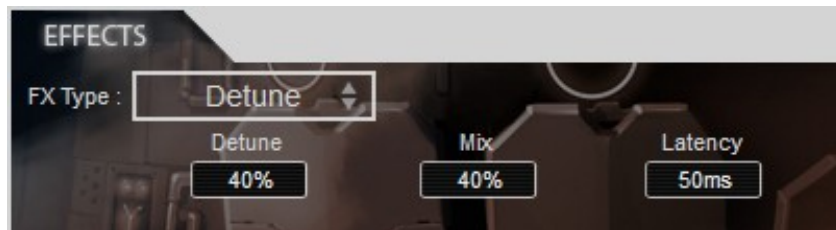**Equalizer Hi Gain :** Gain applied on high frequencies.

Damping Lo Freq : Frequency under which low damping is applied.

Damping Lo Amt : Decay time change under low damping frequency.

Damping Hi Freq : Frequency over which high damping is applied.

Damping Hi Amt : Decay time change over high damping frequency.

Effect Parameters – Detune

This effect creates two detuned versions of the voice input, one panned left and one panned right.

Detune : How detuned the simulated voices are.

Mix : How much effect is mixed in.

Latency : How delayed the simulated voices are.

Mix Parameters

Pan : Balance of the voice between the left and right channels.

Send : How much of the voice is sent to the effect. Setting this to 0% disables the effect.

Using Alter/Ego as a Standalone App

Plogue Alter/Ego can be launched by itself and played live via MIDI keyboard or other MIDI controller. The standalone version of Plogue Alter/Ego effectively makes your computer, audio hardware and MIDI keyboard into a virtual synthesizer that can be played independently of other programs. Unlike using it as a plug-in within a sequencer, your recording ability is limited and you can not edit your performance (though you can use various audio software programs for this).

Launching Alter/Ego in Standalone Mode

First, make sure that you have followed the instructions in the installation section of this manual. Be certain that your

audio/sound interface and MIDI hardware interfaces are properly connected to the computer, your speakers or headphones

are connected and everything is powered up.

To launch Plogue Alter/Ego as a standalone application, click on the Plogue Alter/Ego logo on your desktop or go to the Program Files or Applications folder and launch "Alter/Ego".

Basic Setup Information for Standalone Mode

To use the standalone version you have to configure the Audio and MIDI settings in the Preferences dialog box (found in the Tools menu) before you can play. When used as a plug-in, the host sequencer or tracker program has already set up its audio and MIDI connections, and the Plogue Alter/Ego "plugs in" to them. However, with standalone operation Plogue Alter/Ego communicates directly with your audio and MIDI interface. Setup for Mac and Windows computers is similar, except where indicated. Note that if you change your audio interface, you will almost certainly need to readjust these settings.

Call up the Preferences setup dialog from the Tools menu on the Plogue Alter/Ego standalone interface. You'll see drop-down menus for MIDI Device, Audio Devices, Stereo Pair, Sample Rate and Buffer Size.
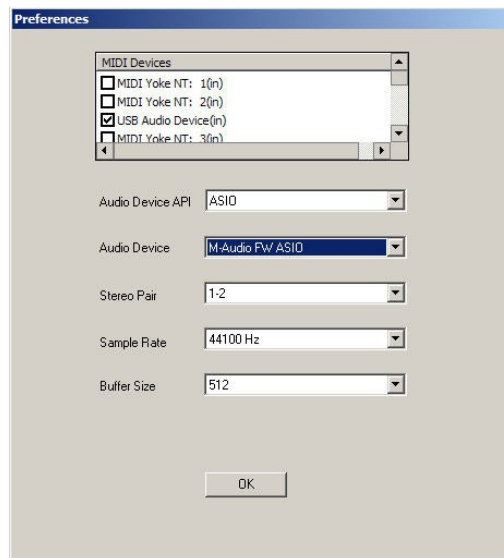
- ♦ *MIDI Device Menu:* All supported (and installed) MIDI interfaces are available in this drop-down list. Select the desired MIDI device from the list. The Plogue Aria Engine sends and receives MIDI on these selected devices.
- ♦ *Audio Device Menu:* All supported (and installed) audio interfaces are available in this drop-down list. Select the desired audio device from the list.
- ♦ *Stereo Pair:* Here you can define which of the stereo outputs should be used. Many pro audio devices have a variety of outputs, so you may choose which of these are available on your system that you would like Alter/Ego to output through.

- ♦ *Sample Rate:* Depending on the sound card and driver you are using, various sample rates are available. Set the desired sample rate here.
- ♦ *Buffer Size:* The buffer size setting will determine the delay between pressing a key on your MIDI keyboard and hearing the sound (a/k/a 'latency'). The default buffer size of 512 samples typically works well, but smaller buffer sizes will give a faster response (lower latency) and higher buffer sizes will give better audio performance (more polyphony and higher fidelity). Most modern computers and audio interfaces can handle a buffer size of 512 samples without a significant reduction in polyphony. If the sound is breaking up or crackling when a note sounds, then first check that the audio connections and wiring are good. Then, try a larger audio buffer size setting. Please note that there is typically a trade-off between higher buffer sizes (polyphony and sound fidelity) and lower buffer sizes (faster response or lower latency). Also note that the sound card buffer size settings determine latency, rather than Plogue Alter/Ego Player itself.

Once you have your Audio and MIDI set up, and have loaded one of the snapshots, you can begin playing Alter/Ego. Try playing a key on your MIDI keyboard. If the MIDI and audio configurations are correct, you should hear the corresponding synth note. If not, check the MIDI connections and wiring, and the MIDI output channel of your MIDI keyboard. Also check that the channel is specified correctly. If you are hearing the notes play, then the basic configuration is complete, and you are ready to use Plogue Alter/Ego.

File Menu for Loading and Saving Snapshots in the Standalone

Configuration presets (.ariax files) for Alter/Ego can be saved and loaded. This gives the user the ability to customize instruments setups to suit personal preferences and save configurations for convenient future use. The File menu choices are:

- ♦ *Load*—any saved configuration preset files in Aria format can be loaded by clicking on this choice and selecting the desired file.
- ♦ *Save*—any configuration can be saved by clicking on this choice, typing a name for the custom preset and saving to a desired location.
- ♦ *Save as default*—any settings can be saved as part of the default, to be loaded automatically at the time the Alter/Ego player is booted in standalone mode.
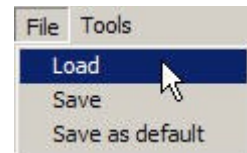
Tools Menu in Standalone ONLY

The Tools menu includes:

- ♦ *Preferences*—as described in the basic setup information above.
- ♦ *Render offline*—MIDI files can be rendered to audio offline using this feature.
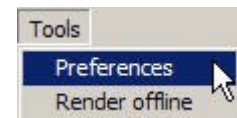
To use the Render Offline feature:

1. Click on the Load MIDI file button.
2. Select the desired MIDI file
3. Click on the Name audio file button.
4. Name the audio file and specify its location.
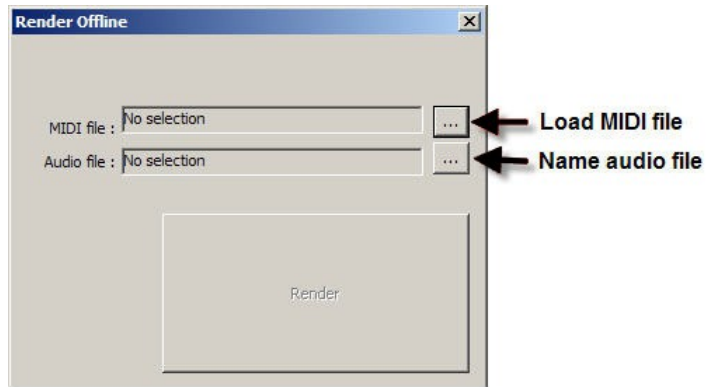
Once the files are in place, there is just one more step:

Click on the Render button. The audio file will be rendered to the specified location.

Using Alter/Ego as a Plug-In

When used as a plug-in, Plogue Alter/Ego is not a standalone program, but rather a virtual instrument module that is seamlessly integrated into your favorite music software program or sequencer. They are called "plug-ins" because these are modular software applications that run inside a "host" music application, (*e.g.* a sequencer or tracker program, typically).

Using Alter/Ego as a plug-in has various advantages:

♦ MIDI recording and sequencing of Plogue Alter/Ego.
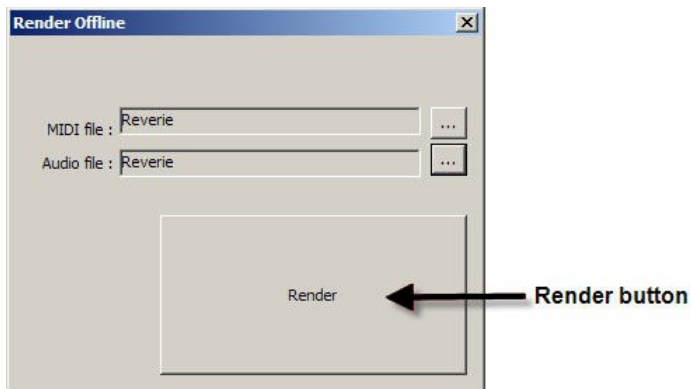♦ Audio mixing of Plogue Alter/Ego with other instrument tracks within a single program.
♦ Easy automation of Plogue Alter/Ego parameters through the use of MIDI CC's or the host's automation.
♦ Effect processing of Plogue Alter/Ego using effect plug-ins in a music software program Saving and recalling of all plug-in settings when the music software program or sequencer file is reloaded.
♦ Integration with other instruments into a "virtual studio".

A great thing about plug-ins is that they work with a large variety of compatible music programs. For example, Plogue Alter/Ego can be used as a VST plug-in in many VST music programs, sequencers, supported tracker programs and hosts. It can also be used as an Audio Units, AAX or RTAS plug-in.

Plug-in Standard	Description	Windows 32bit	Windows 64bit	Mac 32bit	Mac 64bit
VST	The VST plug-in stands for Virtual Studio Technology and was developed by Steinberg, the makers of the Cubase family of audio programs. It is also used by Cakewalk Sonar, Ableton Live, Renoise, Bidule, FL Studio and other sequencers.	X	X	X	X
Audio Units	The Audio Units (AU) plug-in standard was developed by Apple Inc. for Core Audio under Mac OS X. Audio Units is the preferred plug-in format on Mac OS X and is used by Apple GarageBand & Logic and MOTU Digital Performer.			X	X
AAX & RTAS	AAX and RTAS plug-ins are designed to work in the Digidesign Pro Tools environment. Pro Tools hardware and software are used extensively in the pro audio and post production communities.	RTAS	AAX	RTAS	AAX

Plug-in Use

To use Plogue Alter/Ego as a plug-in instrument, you simply launch your host music application/sequencer first and then launch Plogue Alter/Ego from within it. Make sure that your sequencing host program is properly installed and configured, and that it is producing sound properly. Used as a plug-in, Alter/Ego's audio and MIDI data is managed by the host music software application.

Each music software application has its own approach to handling plug-in instruments. They each have a different method of installation as well as differing means of loading and accessing plug-ins. It is important to make sure that you refer to the instructions in your music software application's manual regarding the loading and operation of plug-in instruments.

Windows VST Setup

Make sure the Alter/Ego plugin is within the VST plugin folder used by your host, so that it can be scanned and recognized on startup.

Making the most out of Alter/Ego in a sequencer

If you are used to the way other "Standalone" vocal synthesizers work, you will probably enter MIDI data like the following for détaché'd (non-legato) syllables:

Doing so will sadly not generate the results you expect here.

Since Alter/Ego is a real time plug-in and not a "timeline controlling" application, it is not aware of the content of the "whole" song in advance (it *cannot* read into the future). And because generated transitions between syllables start on note releases, if a new note starts *just after* the end of the previous one, a very quick transition will be inserted by Alter/Ego before the new note starts, and so the whole vocal line will drift in the future.

Even though you can speed up transitions by setting the **Phoneme Speed** and **Wave Rate** parameters to extreme values, this will only make the overall voice sound more robotic.

Instead you should make each note a little shorter than you would normally expect them to last, between 50-75% of its intended length. The results should look something like this:

If you listen carefully you will realize that different note lengths work better for different words, or songs styles, and you may start to use this 'restriction' creatively. For instance, you can emulate spoken word if you use very short notes.

However, if you are entering notes using live MIDI input from keyboard, then you don't have to worry as you will unconsciously figure this out just by "feel" or intuition.

In order to make **legato** sections (changing a note without advancing the syllable) however requires overlaps.

As an example, typing in "I Am" in the text and playing the following:

should give you "I-i-i...A-a-a-am".

You can of course mix and match both methods in a song, as a normal singer would.

You may use a common technique that consists in recording your own voice singing what you have in mind, and temporarily place it side by side with the virtual singer, in order to give you hints of how to encode a particular section.

Use your ears and experiment!

Good luck!

Plogue Alter/Ego ®

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Phoneme Sequencer and Mangling :	Hubert Lamontagne
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Acknowledgments

Appendix : X-Sampa reference

Plogue Alter/Ego uses X-SAMPA for phonetic transcription. This was chosen to eventually allow for multiple language support (unlike Arpabet or Votox), and to remove the need for non-ASCII character support (which is a problem with IPA and Americanist notation).

Quick chart

Special

Pause	#
Short	$1..$4
Long	$6..$9
Variant	*1..*9

Consonants

	Labial		Dental		Alveolar		Palatal		Velar		Glottal
Stop	p	b			t	d	tS	dZ	k	g	
Fricative	f	v	T	D	s	z	S	Z			h
Nasal	m				n				N		
Liquid	w				l	r\	j				

Vowels

	Front	Central		Back
High	i			u
Near-high	I			U
Mid-high	eI			oU
Mid-low	E	V	@	O
Low	{			A
Diphthong	AI	oI		{U
High -r	Ir\			Ur\
Mid -r	Er\	@`		or\
Low -r				Ar\

Full list of phonemes

X-Sampa	IPA	Spellings	Example
Special			
#		.	[Pause, no sound]
[space]	.		[Syllable break]
$6 ... $9	:		[Longer]
$1 ... $4			[Shorter]
*1 ... *9			[Variant phoneme (if available)]
Consonants			
p	p	p	Pin
t	t	t	Tin
tS	tʃ	ch	CHin
k	k	k, q, c (hard)	Kin
b	b	b	Bin
d	d	d	Din
dZ	dʒ	j, ge, gi (soft g)	Gin
g	g	g (hard g), gu	Grin
f	f	f, ph	Fin
T	θ	th (hard)	THin
s	s	s (hard), ss, sc, ce, ci	Sin
S	ʃ	sh	SHin
h	h	h	Him
v	v	v	Video
D	ð	th (soft)	THis
z	z	z, s (soft)	Zit
Z	ʒ	zh, ge (french), su, zu	garaGe, pleaSure, aZure, ZHukhov
m	m	m	kiM
n	n	n	kiN
N	ŋ	ng	kiNG
w	w	w	Wing
l	l	l	Limb
r\	ɹ	r	Rim
j	j	y	Yard

Vowels

i	i	ee, ea	bEAn
I	ɪ	i (short)	bIn
eI	eɪ	a (long)	bAne
E	ɛ	e	bEn
{	æ	a (short)	bAn
V	ʌ	u (short)	bUn
@	ə	Unstressed vowels (e, u...)	thE
u	u	oo	sOOn
U	ʊ	ou (short), oo	shOUld
oU	oʊ	oa, o	bOne
O	ɔ	a, o	bAll
A	ɑ	a, o	PAlm
AI	ɑɪ	i (long)	bInd
oI	ɔɪ	oy	bOY
{U	æʊ	ou (long)	bOUnd
Ir\	ɪɹ	eer, ear	bEER
Er\	ɛɹ	ere, ear	bEAR
@`	ɚ	er, ur, ir	bURn
Ur\	ʊɹ	oor	pOOR
or\	ɔɹ	or, oar	bOAR
Ar\	ɑɹ	ar	bAR

Japanese-specific

e	e	e	
a	a	a	
o	o	o	
M	ɯ	u	
4	ɾ	r	

Miscellaneous

R	ʁ	r (French, German)	
y	y	French u, German ü	
Y	ʏ	German ü (short)	
2	ø	French eu, German ö	

6	ɐ	German er	
B	β	Spanish soft b	
G	ɣ	Spanish soft g	
C	ç	German ch (after ieäöü)	
x	x	Spanish j (Americas)	
X	χ	German ch (after aou)	
l*1	l	Non-velar L (French, German, Spanish...)	
L	ʎ	Spanish LL	
H	ɥ	French u in ui	
J	ɲ	Ñ, French gn	

Alphabetic tables

Consonants

b	b	g (soft)	dZ	q	k	th	T, D
c (hard)	k	h	h	qu	kw	-tial	S@l
c (soft)	s	j	dZ	r	r\	-tion, -tious	S@n, S@s
-cial	S@l	k	k	s	s, z	-ture	tS@`
-cion, -cious	S@n, S@s	l	l	-sion, -sian	Z@n	v	v
ch	tS	m	m	ss	s	w, wh	w
d	d	n	n	-ssion, -ssian	S@n	x	ks, gz
-dure	dZ@`	ng	N	sh	S	y	j
f	f	p	p	-sure	S@`, Z@`	z	Z
g (hard)	g	ph	f	t	t		

Vowels

a (long)	EI	e (short)	E	ie	AI, i	ow	{U, oU
a (short)	{, A, O	e (unstressed)	@	o (long)	oU	u (long)	ju, u
a (unstressed)	@	ea, ee, ei	i	o (short)	O, A	u (short)	V, u
ah	A	ew	u, ju	o (unstressed)	@	u (unstressed)	@
ai	eI	ey	eI	oa	oU	ue	ju
au, aw	O	i (long)	AI, i	oo	u	uy	AI
ay	eI	i (short)	I	ou	{U, U, oU	y	AI, I, i
e (long)	i, eI	i (unstressed)	I, @	Oi, oy	oI		

Vowels +r

air	Er\	eer	Ir\	-ire	A j@`	ur	@`
ar	Ar\	eir	Er\	or, oar	or\	-ure	Ur\, jUr\
-are	Er\	er	@`	oor	Ur\	yr	Ir\, @`
aur	or\	-ere	Er\, Ir\	our	or\, Ur\, { w@`		
ear	Ir\, Er\	ir	@`	oir	wA j@`		