WhispAir

Performance Synthesizer

Version 1.1

Presets and testing by kraftraum soundcloud.com/kraftraum

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Introduction

WhispAir is a software synthesizer plug-in for Microsoft Windows (VST2/VST3) and Apple macOS (VST2/VST3/AU). It is written in native C++ code for high performance and low CPU consumption. The main features are:

- All parameters on one single page
- Three flexible wavetable oscillators
- Classic *Full Bucket* stereo filter
- Three modulation and four envelope generators
- Unison mode and Chorus
- TUN/SCL/KBL micro-tuning file import
- MTS-ESP (https://oddsound.com/) dynamic micro-tuning support
- All parameters can be controlled by MIDI controllers
- Plug-in supports Windows and macOS (32 bit and 64 bit)

WhispAir is based on the new **iPlug2** framework maintained by **Oli Larkin and the iPlug2 team**. Big thanks, guys!!! Without your work it would not have been possible to create a resizable *WhispAir* user interface.

To resize the plug-in you just grab the yellow triangle at the bottom right of the *WhispAir* window and drag it. You can save the current window size using the menu entry "Save Window Size" in the *Options Menu*.

If you have trouble with the standard version of *WhispAir*, please grab the (sound-wise identical) "N" version of the plug-in which is based on the original **iPlug** framework.

Acknowledgments

kraftraum (https://soundcloud.com/kraftraum) has designed the version 1.0 default patches 37 to 62 and was Beta testing – thank you so much, my dear friend!!!

Oli Larkin and the iPlug/iPlug2 team.

Laurent Bergman for translating the *Full Bucket* manuals to French.

Digital Oscillators

WhispAir features three wavetable oscillators – each oscillator holds one of 40 wavetables (37 built-in and 3 user tables). Oscillator 1 offers additional Amplitude Modulation by oscillator 2 and/or oscillator 3, while the other two oscillators allow for Hard Sync and Linear Frequency modulation.

Pitch Section

The three parameters MASTER TUNE (± 100 cents), PORTAMENTO (Portamento time) and PITCH BEND (± 12 notes) of the Pitch section affect all oscillators. Also note the micro tuning options – see section *Micro Tuning*.

Common Oscillator Parameters

The following parameters are common for all three oscillators:

- ON/OFF switch
- Wavetable selection and modulation (see section *Wavetables*)
- OCTAVE (16', 8', 4', and 2'), PITCH (± 12 notes), and TUNE (± 100 cents)
- FREQUENCY modulation (± 48 notes) and AMPLITUDE modulation
- START PHASE (start of the current waveform; 0° to 360°)

Note that one can select whether the oscillator should run continuously or restart on the next note event.

Specific Parameters To Oscillator 1

Oscillator 1 allows for Amplitude Modulation (AM) by the two other oscillators; the amount of AM can be set individually. Furthermore it is possible to modulate the overall AM amount by any of the available modulation sources (see section *Modulation Sources*).

Specific Parameters To Oscillator 2 And 3

Oscillators 2 and 3 can be hard-synced by oscillator 1 or mutually by each other. The same is true for Linear Frequency Modulation (FM). The amount of Linear FM can be modulated by any of the available modulation sources (see section *Modulation Sources*).

Wavetables

The wavetables can be selected by clicking on the respective wavetable screen and are grouped in four categories:

- **Standard Waveforms**
  Classical waveforms like *Sawtooth* or *Square* that are well-known from analog synthesizers.
- **Additive Synthesis**
  Waveforms that are derived via additive synthesis.
- **Resynthesis**
  Waveforms that are re-synthesized from various samples.
- **User-Defined**
  Wavetables that can be imported from *Xfer Serum* or *Waldorf blofeld* wavetable files or even from standard WAVs.

You can also step through the different wavetables by clicking the UP/DOWN buttons. For a complete list of wavetables see section *Built-In Wavetables*.

Imported WAV files will be treated as a single wavetable consisting of subsequent waves with 2048 samples each. The maximum number of imported waves (i.e. the length of the wavetable) is 64.

The SHAPE parameter controls which wave of the selected wavetable will be played. As known from the famous *PPG Wave* synthesizers (and others), this parameter can also be changed/modulated by one of the modulation sources. Therefore, two modes are available:

- **INTPL.** (Interpolated)
  The waves are "morphed" into each other. This will result in a smooth transition between adjacent waves of the wavetable.
- **RAW**
  The wave are "stepped through" i.e. there is no smoothing between adjacent waves. This will result in rather harsh transitions.

Oscillator Mixer

The signals of the three oscillators as well as an additional white noise signal are sent to the Oscillator Mixer. Each signal has its own LEVEL and (stereo) PANORAMA control. The output of the mixer is finally sent to the filter.

Filter

The potentially self-resonating stereo filter can work in three modes: **LP24** (lowpass with 24dB/Octave characteristics), **LP12** (lowpass with 12dB/Octave characteristics), and **HP24** (highpass with 24dB/Octave characteristics).

Besides the standard cutoff, resonance, keyboard tracking and modulation controls it features an individual ADSR envelope generator (EG) with exponential slopes. The EG can be triggered for each key pressed (multiple) or only for the first key when played *legato* (single).

Amplifier And Chorus

The stereo filter signal is sent to the amplifier section which has its own envelope generator (identical to the EG of the Filter section). The overall amplitude can be modulated by Velocity and additionally by any modulation source.

Finally the signal is processed by a wide-range stereo Chorus unit (which also can be deactivated). The Chorus has controls for effect mix, manual delay time, modulation depth and speed, and positive or negative feedback.

Modulation Sources

Apart from the filter and amplifier envelope generators, *WhispAir* adds two general purpose EGs with linear slope characteristics, two modulation generators (MGs) and a third Vibrato MG. All three MGs can be synchronized to the host tempo. MG1 and MG2 have different waveforms while the Vibrato MG always produces a sine wave.

All the EGs and MGs feature an amount control that allows for modulation of the generator signal level by any of the available modulation sources. This way for example a vibrato can be controlled by the modulation wheel or velocity, or the modulation amount of an MG can itself be modulated by an envelope generator.

Other modulation sources are Modulation Wheel, Pitch Bend, Velocity, Poly and Channel Aftertouch, and Note value. Most of these sources are available in a bipolar and unipolar (positive) version.

Key Assign Modes

In POLY mode, *WhispAir* can be played polyphonically or monophonically – the number voices can be chosen from 1 to 64.

In UNISON mode, these voices will be "stacked" i.e. played monophonically all for the same note value while it is possible to set the overall detune and stereo spread amount. Thus it is possible to play all 64 voices for one key at the same time – note that this may have a severe impact on your CPU performance though.

X-MODE is a special performance mode where the enabled oscillators are played in sequence per key (in contrast to all at the same time). For example if oscillators 1 and 2 plus X-MODE are enabled, the first note pressed will cause only oscillator 1 to play while the next note plays oscillator 2 etc. This way you can produce very different sounds per note.

Finally, you can set whether the polyphonic Portamento should only be activated during *legato* play.

Control Section

The Control section has controls for selecting and handling programs as well as MIDI (un)learn and micro tuning.

Note that the COPY, PASTE and INIT buttons are shortcuts to the respective function of the *Options Menu*.

MIDI Learn And The Config File "whispair.ini"

Every parameter of *WhispAir* can be controlled by one MIDI controller. If you want to change the assignment of MIDI controller (CC; *MIDI Control Change*) to *WhispAir* parameter the *MIDI Learn* function comes in quite handy: Just click the *MIDI Learn* button in the Control Section (caption turns red) and wiggle both the MIDI controller and the parameter you want to assign (you can abort *MIDI Learn* by clicking the button again). If you want to unlearn the assignment, right-click the *MIDI Learn* button (the label now reads "UNLEARN") and activate it. Now wiggle the MIDI controller or the parameter that you want to unlearn. To save the controller assignments use "Save Configuration" in the *Options Menu* (see below); they are stored in the `whispair.ini` configuration file. The exact location of this file depends on your operating system and will be displayed when you click on "Reload" or "Save Configuration".

Micro Tuning

WhispAir features 14 built-in microtonal scales and can import various tuning files (Scala SCL/KBM, TUN). Scales are selected by clicking on the TUNING control which also displays the name of the current scale.

Furthermore, *WhispAir* is compatible with MTS-ESP by ODDSound, a very cool framework for dynamic micro tuning. For more (and how to get) MTS-ESP plug-ins see https://oddsound.com.

Options Menu

When clicking on the *MENU* button, a context menu opens with the following options:

Copy Program	Copy current program to internal clipboard
Paste Program	Paste internal clipboard to current program (either the full program, only the sound, or only the sequencer data)
Init Program	Initialize the current program
Load Program	Load a program file containing a patch to *WhispAir's* current program
Save Program	Save *WhispAir's* current program to a program file
Load Bank	Load a bank containing 64 patches into *WhispAir*
Save Bank	Save *WhispAir's* 64 patches to a bank file
Select Startup Bank	Select the bank file that should always be loaded when *WhispAir* is started
Load Startup Bank	Load the Startup bank file; can also be used to check what the current Startup bank is
Unselect Startup Bank	Unselect the current Startup bank
Default Path for Program Files	Sets the default path for program and bank files
MIDI Thru	Set globally if MIDI data sent to *WhispAir* should be sent through to its MIDI output (stored in configuration file)
Ignore Program Change	Set globally if MIDI Program Change data sent to *WhispAir* should be ignored (stored in configuration file)
Reload Configuration	Reload *WhispAir's* configuration file
Save Configuration	Save *WhispAir's* configuration file
Window Size...	Change the window size of *WhispAir*
Save Window Size	Stores the current window size to the configuration file so that it will be restored on the next loading of *WhispAir*
Check Online for Update	When connected to the Internet, this function will check if a newer version of *WhispAir* is available at fullbucket.de
Visit fullbucket.de	Open fullbucket.de in your standard browser

Built-In Wavetables

Category	Wavetable	Number of Waves
Standard Waveforms	Saw	1
	Pulse	1
	Full PWM	1
	Tri	2
	Sine	2
	Sine-Tri-Square-Saw	4
	Saw-Square	2
	Saw-Sine	2
	Saw-Tri	64
	Square-Tri	64
	Square-Sine	2
	DW-8000	16
Additive Synthesis	Dirac Meltdown	64
	Odd	16
	Even	16
	Even to Odd	9
	Primes	12
	Octaves	8
	Frequency Up	16
	Phased Saw	64
	Drawbar Full	16
	Drawbar Mixed	16
Resynthesis	Acoustic Piano	33
	Pianet	33
	Slap Low	33
	Slap High	33
	Re-PWM	33
	Resonance 1	33
	Resonance 2	33
	MP4 Cross Modulation	33
	Formant Shift	33
	A-O-E	3
	Geesh	33
	TD 'Teh'	33
	Texture 1	33
	Texture 2	33
	Ladies & Gentlemen	33

Parameters

Common

parameter	ID	description
Volume	0	Total volume
Master Tune	1	Master tune (± 100 cents)
Number of Voices	2	Number of voices (1 – 64)
Unison Mode	3	Unison off/on
Unison Detune	4	Unison detune
Unison Spread	5	Unison stereo spreading
X-Mode	6	X-Mode off/on
Pitch Bend	7	Amount of pitch bending (± 12 notes)
Portamento	8	Portamento time
Portamento Legato	9	Portamento Legato off/on

Digital Oscillator 1

parameter	ID	description
Osc Off/On	10	Oscillator on/off
Wave Table	11	ID of the current wavetable
Wave Shape	12	Wavetable shape
Wave Mode	13	Wavetable shape mode (*Interpolated*/*Raw*)
Wave Shape Mod	14	Wavetable shape modulation amount
Wave Shape Mod Source	15	Wavetable shape modulation source
Restart Mode	16	Restart wave off/on
Start Phase	17	Start phase (0 to 360°)
AM by Osc 2	18	Amplitude Modulation by oscillator 2
AM by Osc 3	19	Amplitude Modulation by oscillator 3
AM Mod	20	AM modulation amount
AM Mod Source	21	AM modulation source
Octave	22	Octave (16’, 8’, 4’, 2’)
Pitch	23	Pitch (± 12 notes)
Tune	24	Tune (± 100 cents)
Frequency Mod	25	Frequency modulation amount
Frequency Mod Source	26	Frequency modulation source
Amplitude Mod	27	Amplitude modulation amount
Amplitude Mod Source	28	Amplitude modulation source

Digital Oscillator 2

parameter	ID	description
Osc Off/On	29	Oscillator on/off
Wave Table	30	ID of the current wavetable
Wave Shape	31	Wavetable shape
Wave Mode	32	Wavetable shape mode (*Interpolated*/*Raw*)
Wave Shape Mod	33	Wavetable shape modulation amount
Wave Shape Mod Source	34	Wavetable shape modulation source
Restart Mode	35	Restart wave off/on
Start Phase	36	Start phase (0 to 360°)
Hard Sync	37	Hard Sync (by oscillator 1 or 3)
Linear FM	38	Linear FM amount
Linear FM Source	39	Linear FM source (oscillator 1 or 3)
Linear FM Mod	40	Linear FM modulation amount
Linear FM Mod Source	41	Linear FM modulation source
Octave	42	Octave (16', 8', 4', 2')
Pitch	43	Pitch (± 12 notes)
Tune	44	Tune (± 100 cents)
Frequency Mod	45	Frequency modulation amount
Frequency Mod Source	46	Frequency modulation source
Amplitude Mod	47	Amplitude modulation amount
Amplitude Mod Source	48	Amplitude modulation source

Digital Oscillator 3

parameter	ID	description
Osc Off/On	49	Oscillator on/off
Wave Table	50	ID of the current wavetable
Wave Shape	51	Wavetable shape
Wave Mode	52	Wavetable shape mode (*Interpolated*/*Raw*)
Wave Shape Mod	53	Wavetable shape modulation amount
Wave Shape Mod Source	54	Wavetable shape modulation source
Restart Mode	55	Restart wave off/on
Start Phase	56	Start phase (0 to 360°)
Hard Sync	57	Hard Sync (by oscillator 1 or 2)
Linear FM	58	Linear FM amount
Linear FM Source	59	Linear FM source (oscillator 1 or 2)

parameter	ID	description
Linear FM Mod	60	Linear FM modulation amount
Linear FM Mod Source	61	Linear FM modulation source
Octave	62	Octave (16′, 8′, 4′, 2′)
Pitch	63	Pitch (± 12 notes)
Tune	64	Tune (± 100 cents)
Frequency Mod	65	Frequency modulation amount
Frequency Mod Source	66	Frequency modulation source
Amplitude Mod	67	Amplitude modulation amount
Amplitude Mod Source	68	Amplitude modulation source

Oscillator Mixer

parameter	ID	description
Level Osc 1	69	Level of oscillator 1
Level Osc 2	70	Level of oscillator 2
Level Osc 3	71	Level of oscillator 3
Level Noise	72	Level of white noise
Pan Osc 1	73	Panorama of oscillator 1
Pan Osc 2	74	Panorama of oscillator 2
Pan Osc 3	75	Panorama of oscillator 3
Pan Noise	76	Panorama of white noise

Filter

parameter	ID	description
Type	77	Filter type (*LP24*, *LP12*, *HP24*)
Cutoff	78	Cutoff frequency
Resonance	79	Resonance
Keyboard Track	80	Keyboard tracking
Filter EG Intensity	81	Intensity of the Filter EG
Filter cFM	82	Cutoff frequency modulation amount
Filter cFM Source	83	Cutoff frequency modulation source

Amplifier

parameter	ID	description
Velocity	84	Velocity
Amplitude Mod	85	Amplitude modulation amount
Amplitude Mod Source	86	Amplitude modulation source

Chorus

parameter	ID	description
Chorus	87	Chorus off/on
Chorus Delay	88	Chorus delay
Chorus Speed	89	Chorus modulation speed
Chorus Depth	90	Chorus modulation depth
Chorus Feedback	91	Chorus feedback (± 100%)
Chorus Mix	92	Chorus effect mix

Filter EG

parameter	ID	description
Filter EG Trigger	93	EG Trigger (*Multiple*/*Single*)
Filter EG Mod	94	EG level modulation
Filter EG Mod Source	95	EG level modulation source
Filter EG Attack	96	Attack time
Filter EG Decay	97	Decay time
Filter EG Sustain	98	Sustain level
Filter EG Release	99	Release time

Amplifier EG

parameter	ID	description
Amp EG Trigger	100	EG Trigger (*Multiple*/*Single*)
Amp EG Mod	101	EG level modulation
Amp EG Mod Source	102	EG level modulation source
Amp EG Attack	103	Attack time
Amp EG Decay	104	Decay time
Amp EG Sustain	105	Sustain level
Amp EG Release	106	Release time

Linear EG 1

parameter	ID	description
Lin EG 1 Trigger	107	EG Trigger (*Multiple*/*Single*)
Lin EG 1 Mod	108	EG level modulation
Lin EG 1 Mod Source	109	EG level modulation source
Lin EG 1 Attack	110	Attack time
Lin EG 1 Decay	111	Decay time
Lin EG 1 Sustain	112	Sustain level
Lin EG 1 Release	113	Release time

Linear EG 2

parameter	ID	description
Lin EG 2 Trigger	114	EG Trigger (*Multiple*/*Single*)
Lin EG 2 Mod	115	EG level modulation
Lin EG 2 Mod Source	116	EG level modulation source
Lin EG 2 Attack	117	Attack time
Lin EG 2 Decay	118	Decay time
Lin EG 2 Sustain	119	Sustain level
Lin EG 2 Release	120	Release time

MG 1

parameter	ID	description
MG 1 Frequency	121	Frequency
MG 1 Waveform	122	Waveform (*Sine, Triangle, Rectangle, Saw Down, Saw Up, S/H*)
MG 1 Sync to Host	123	Sync to host tempo on/off
MG 1 Sync Rate	124	Sync to host tempo rate
MG 1 Mod	125	MG level modulation
MG 1 Mod Source	126	MG level modulation source

MG 2

parameter	ID	description
MG 2 Frequency	127	Frequency
MG 2 Waveform	128	Waveform (*Sine, Triangle, Rectangle, Saw Down, Saw Up, S/H*)
MG 2 Sync to Host	129	Sync to host tempo on/off
MG 2 Sync Rate	130	Sync to host tempo rate
MG 2 Mod	131	MG level modulation
MG 2 Mod Source	132	MG level modulation source

Vibrato MG

parameter	ID	description
Vibrato Frequency	133	Frequency
Vibrato Sync to Host	134	Sync to host tempo on/off
Vibrato Sync Rate	135	Sync to host tempo rate
Vibrato Mod	136	Vibrato level modulation
Vibrato Mod Source	137	Vibrato level modulation source

Frequently Asked Questions

How do I install WhispAir *(Windows VST2 32 bit version)?*

Just copy the files `whispair.dll` from the ZIP archive you have downloaded to your system's or favorite DAW's VST2 plug-in folder. Your DAW should automatically register the *WhispAir* VST2 plug-in the next time you start it.

How do I install WhispAir *(Windows VST2 64 bit version)?*

Just copy the file `whispair64.dll` from the ZIP archive you have downloaded to your system's or favorite DAW's VST2 plug-in folder. Your DAW should automatically register the *WhispAir* VST2 plug-in the next time you start it.

Note: You may have to remove any existing (32 bit) `whispair.dll` from your VST2 plug-in folder or else your DAW may screw the versions up...

How do I install WhispAir *(Windows VST3 64 bit version)?*

Just copy the files `whispair.vst3` from the ZIP archive you have downloaded to your system's or favorite DAW's VST3 plug-in folder. Your DAW should automatically register the *WhispAir* VST3 plug-in the next time you start it.

How do I install WhispAir *(Mac VST2/VST3/AU 64 bit)?*

Locate the downloaded PKG package file `whispair_1_1_0_mac.pkg` in Finder (!) and do a right- or control-click on it. In the context menu, click on "Open". You will be asked if you really want to install the package because it comes from an "unidentified developer" (me ☺). Click "OK" and follow the installation instructions.

What is the "N" version of WhispAir*?*

The "N" version is the non-resizable version of *WhispAir* that should run on almost any older Windows or Mac machine. So if you have problems with the standard *WhispAir* version, this is the one to go for.

What is the plug-in ID of WhispAir*?*

The ID is **`whsp`**.

How do I know if a new version of WhispAir *is available?*

When connected to the Internet, open the File menu (see section *Options Menu*) by clicking the MENU icon and select the entry "Check Online for Updates". If a new version of *WhispAir* is available on fullbucket.de the respective information will be shown in a message box.

How do I resize WhispAir *window?*

Just grab the yellow triangle at the bottom right of the *WhispAir* window and drag it. You can save the current window size using the menu entry "Save Window Size" in the *Options Menu*.