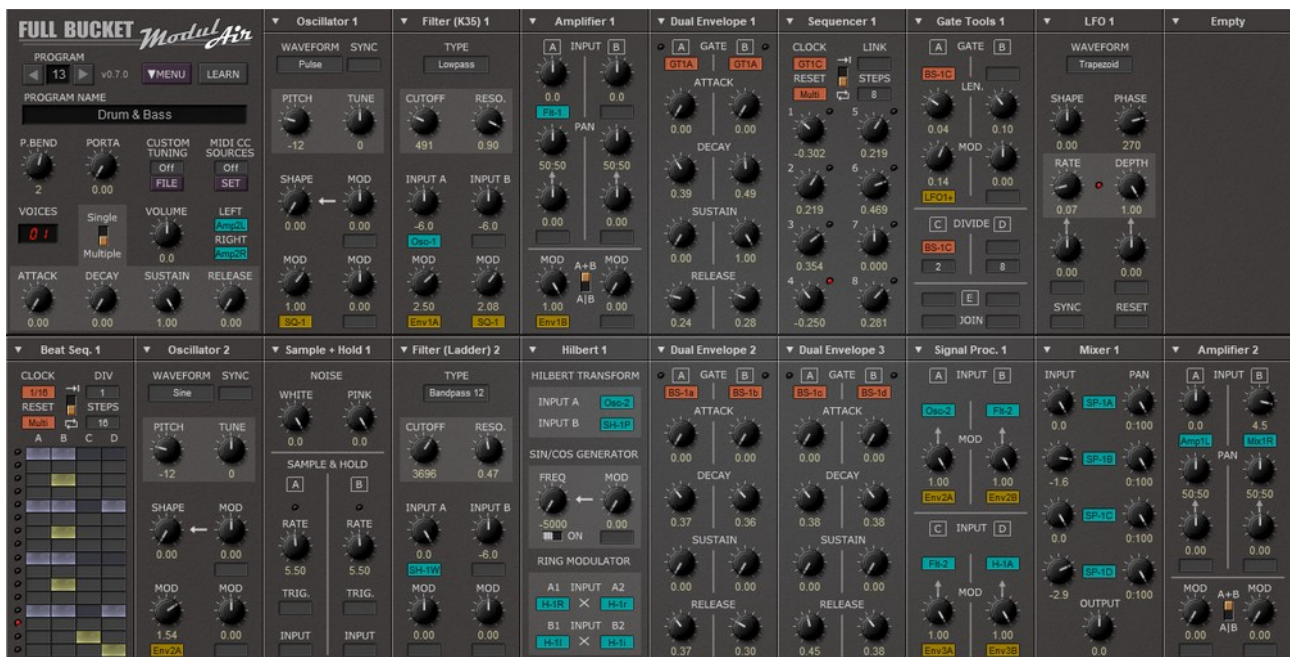


ModulAir

Polyphonic Modular Synthesizer

Version 0.7 Beta

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<http://www.fullbucket.de/music>



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Introduction

ModulAir is a polyphonic modular software synthesizer plug-in for Microsoft Windows (VST) and Apple macOS (VST/AU). It is written in native C++ code for high performance even on "lighter" systems. The main features are:

- Fully modular architecture
- Up to 18 modules per patch
- Many module types available
- Up to 64 voices polyphony
- TUN/SCL micro-tuning file import
- MIDI Learn – all parameters can be controlled by MIDI CC
- Double precision audio processing
- Plug-in supports Windows and macOS (32 bit and 64 bit)

ModulAir is a **work in progress, unfinished, buggy**, and as of now with only a few quirky presets. **Expect horrible things to happen.** It is a clumsy unhandy complicated piece of software. I cannot even guarantee that the next version of *ModulAir* is backwards compatible to any version you may download in the future.

You have been warned!

Anyway, *ModulAir* is currently in Beta stage. I am not sure if it ever reaches the General Availability stage since I am constantly adding modules and stuff to it. ☺

If you experience any problems that you cannot resolve by following the suggestions in the →*Frequently Asked Questions*: Please send a mail to `full.bucket@gmx.net`. Do the same if you have suggestions or comments.

Please note: I will not add "virtual cables" dangling on the screen. Instead I will stay with the "plug" concept that I already use at my other plug-ins (*FB-3X00* series, *blooo*, *scrooo*, *qyooo*, etc.).

Acknowledgments

- First I wanted to thank Cockos and **Oli Larkin** for developing and maintaining the WDL(-OL)/IPlug framework, and **Laurent Bergman** for his French manuals.
- The TUN/SCL file handling source code is adapted from **Mark Henning** at <https://www.mark-henning.de/>.
- Furthermore a **BIG THANKS** to **Tim Stinchcombe** and **Will Pirkle** for their in-depth analysis of the K35 filter chip.
- Last not least another THANK YOU! to the KVR Audio community, especially to BlackWinny, Halomusic, Dee.P.Tree, fmr, and martin_1.

Common Section

ModulAir is a polyphonic modular synthesizer that can hold up to 18 modules. The Common section is used to select and (re)name the current program, apply →*MIDI Learn*, and invoke the →*Options Menu*. Furthermore you can set the following parameters: *Pitch Bend* range (± 24 notes), *Portamento* time, →*Custom Tuning*, →*MIDI CC Sources*, and the number of voices (polyphony).

To send a signal to the left and/or right output of *ModulAir* it has to be “plugged” into the *LEFT* and/or *RIGHT* plugs. Clicking on a plug opens a menu where you can select the signal source that you want to assign to the plug. The *LEFT/RIGHT* plugs will glow red if no signal is connected to them – in this case you will not hear any sound on the respective stereo channel!

The volume envelope of the final signal is shaped by an ADSR generator with adjustable trigger mode (*Single* or *Multiple*) and a *Volume* knob. Thus, you do not have to add extra Amplifier and Envelope modules (although you can) for your sound patch.



Modules

Currently there are 31 different module types available of which 18 different modules can be used per program at the same time. The module types are divided into the following groups:

- Oscillators (6 types)
- Filters (4)
- Amplifiers (4)
- Processors (3)
- Modulators (6)
- Sequencers (4)
- Tools (4)

You can add/change a module by clicking the header of the respective slot and selecting the desired module from a context menu. If you right-click the header you can move the module to a different slot or remove it completely.

To patch a module plug just click on the plug symbol and select the required source signal from the context menu. Audio signals are color-coded in blue, modulation signals in yellow, and Gate signals in orange.

Oscillators Modules

The following oscillator modules are available:

- **Standard Oscillator** (with Hard Sync)
- **Dual Oscillator**
- **Oscillator with Linear Frequency Modulation** (with Hard Sync)
- **Spectral Formant Oscillator** (as known from the *scrooo* plug-in)
- **Wavetable Oscillator** (with Hard Sync)
- **Dual Noise Generator** (Pink and White noise)

Note: The Wavetable Oscillator can read *Serum* WAV and *Waldorf Blofeld* SysEx wavetable files. Any other WAV file will be treated as a wavetable of 2048 samples with at most 64 subsequent wavetable entries.

Filter Modules

The following filter modules are available:

- **Ladder Filter** (Moog-style)
- **K35 Filter** (Korg PS-style)
- **Comb Filter** (with positive and negative feedback)
- **Resonators** (Korg PS-style)

The Ladder and Comb filters are able to self-oscillate.

Amplifier Modules

The following amplifier modules are available:

- **Amplifier** (2 signal inputs, stereo)
- **Mixer** (4 signal inputs, stereo)
- **Signal Processor** (4 individual mono amplifiers)
- **Blender** (2 individual mono crossover mixers)

Note that the Mixer module has no modulation input.

Processor Modules

The following processor modules are available:

- **Dual Ring Modulator** (with controllable amount)
- **Audio Sample & Hold** (with fixed or controllable frequency)
- **Hilbert Transform** (as know from the *Full Bucket Frequency Shifter*)

Modulation Modules

The following modulation modules are available:

- **Dual Envelope** (ADSR, exponential slopes)
- **Quad Envelope** (AD, exponential slopes)
- **Dual Linear Envelope** (ADSR, linear slope)
- **LFO**
- **Dual LFO**
- **Sample & Hold** (including White and Pink noise sources)

The LFOs and the Sample & Hold can be synchronized to the host tempo.

Sequencer Modules

The following sequencer modules are available:

- **Sequencer** (up to 8 steps)
- **Beat Sequencer** (4 trigger lines with up to 16 steps each)
- **Sequential Switch** (up to 8 steps)
- **Sequential Audio Switch** (up to 8 steps)

All sequencer modules can be linked together to increase the number of steps.

Tool Modules

The following tool modules are available:

- **Voltage Processor** (4 channels for modulation signals)
- **LAG and Adder** (2 LAG processors and two adders for modulation signals)
- **Sample Delay** (6 delay lines up to 16 samples)
- **Gate Tools** (2 gate time modulators, 1 divider, 1 join)

Note: Since each module of *ModulAir* delays its input signal by one sample, the Sample Delay is useful for compensating the delay between different signal paths. For example if you mix two audio signals *A* and *B* where *B* is routed through an extra module (e.g. a filter), the signal "phase" between *A* and *B* will differ by one sample. If you pass signal *A* through a Sample Delay, the resulting signals will be "in sync" again.

Miscellaneous Functionality

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
Load Program	Load a program file containing a patch to <i>ModulAir's</i> current program
Save Program	Save <i>ModulAir's</i> current program to a program file
Load Bank	Load a bank file containing 64 <i>ModulAir</i> patches
Save Bank	Save <i>ModulAir's</i> 64 patches to a bank file
Init Program	Initialize the current program
Check Online for Update	When connected to the Internet, this function will check if a newer version of <i>ModulAir</i> is available at fullbucket.de
Visit fullbucket.de	Open fullbucket.de in your standard browser

MIDI Learn

Assigning MIDI controllers to *ModulAir* parameters is done via the MIDI Learn function. To activate *MIDI Learn*, click on the respective button and wiggle both the MIDI controller and *ModulAir's* parameter that you want to link. 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.

Custom Tuning

For micro-tonal playing, you can load a TUN or SCL micro-tuning definition file by clicking on the Custom Tuning *FILE* button. Once you have loaded such a file you can switch micro-tuning on and off. For more information about micro-tuning check the **Microtonal Synthesis** website at <http://www.microtonal-synthesis.com/> and Mark Henning's website at <https://www.mark-henning.de/>.

MIDI CC Sources

16 MIDI controller signals can be used as modulation sources. To assign a MIDI CC to one of the 16 sources press the *SET* button and choose the respective controller. The same way works to unassign a controller.

Startup Bank

If you want to use your own FXB sound bank at startup, just save it to the same location where the *ModulAir* plug-in is stored and rename it to `ModulAir.fxb` (case sensitive!).

Frequently Asked Questions

How do I install ModulAir (Windows 32 bit version)?

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

How do I install ModulAir (Windows 64 bit version)?

Just copy the file `modulair64.dll` from the ZIP archive you have downloaded to your system's or favorite DAW's VST plug-in folder. Your DAW should automatically register the *ModulAir* VST plug-in the next time you start it.

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

How do I install ModulAir (Mac VST/AU universal 32/64 bit)?

Locate the downloaded PKG package file `modulair_0_7_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 plug-in ID of the ModulAir?

The ID is fbMD.

Will you support ModulAir?

Yes. If you have problems, found a bug, or have some suggestions about *ModulAir* please send me a mail: full.bucket@gmx.net .

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

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

It crashes...!

You have been warned: →*Introduction*

I get no sound!

Have you checked that a signal is connected to the overall output plugs in the →*Common Section*?