

hypercyclic

User Guide

(c) 2007 altalogix bvba - all rights reserved.
www.mucoder.com/hypercyclic



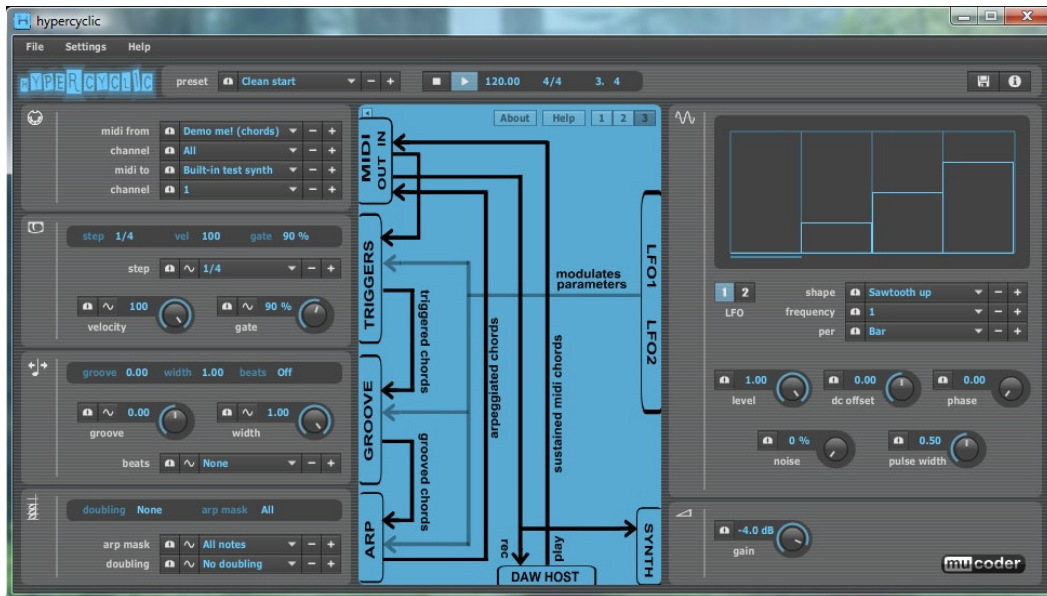
VST versions use VST Plugin Technology by Steinberg.
Standalone Windows version uses ASIO Technology by Steinberg.
VST and ASIO are a trademark of Steinberg Soft- und Hardware GmbH.
All other trademarks are the trademarks of their respective owners.

Table Of Contents

- Introduction
- Parameter Reference
 - Midi Panel
 - midi from
 - channel (from)
 - midi to
 - channel (to)
 - Trigger Panel
 - step
 - velocity
 - gate
 - Groove Panel
 - groove
 - width
 - beats
 - Arp Panel
 - arp mask
 - doubling
 - LFO Panel
 - LFO
 - shape
 - frequency
 - per
 - level
 - dc offset
 - phase
 - noise
 - pulse width
 - Synth Panel
 - gain
 - Header Panel
 - preset
 - transport buttons
 - bpm, time signature, songposition
 - file button
 - help button button
 - Standalone Pull-down Menu
 - File menu
 - Settings menu
 - Help menu
- Setting up hypercyclic with your host application
 - Ableton Live 6.0.7 (Windows, Mac OSX)
 - Cubase 4.0.3 (Windows, Mac OSX)
 - Energy XT2 (Windows, Linux)
 - Logic 7.2 Express (Mac OSX)

Introduction

Hypercyclic is an LFO-driven MIDI arpeggiator, gate effect and step sequencer for mangling MIDI input chords. Two tempo-synced LFOs can be used to modulate various parameters to create interesting rhythmic effects and chord variations. A unique feature is the possibility to modulate the sequencer step size itself, which is useful for creating glitchy stuttering effects.



The product is further complemented by a groove function for playing slightly off the beat. The groove parameters can also be modulated over time by the LFOs, adding to the rhythmic variation.

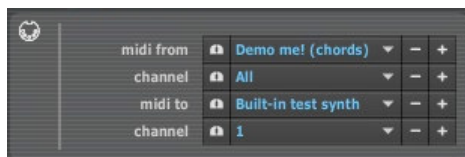
The sweetspot for hypercyclic is the narrow border between chaos and regularity. Or, in other words, how to induce a certain pleasant randomness, yet forcing everything to align again on the bar or beat boundaries.

The main use for hypercyclic is to generate midi that can be recorded and/or sent to other plugins. However it also features a simple built-in synth for testing purposes.


Supported platforms are Windows (standalone, vst), Mac (standalone, vst, au) and Linux (standalone, vst).

Parameter Reference

MIDI Routing Panel



- midi from** | This parameter controls where hypercyclic gets its midi input from. You can choose from either the built-in options or from midi input devices on your system. The built-in options are:
- **Not connected.** Hypercyclic will receive no midi input
 - **Demo me! (chords).** Hypercyclic will receive midi from a built-in polyphonic demo track, containing a set of sustained chords. This will be looped.
 - **Demo me! (bass).** Midi will be received from a built-in monophonic demo track, containing a set of sustained single notes. This will be looped.
 - **VST/AU host.** Hypercyclic will receive midi from the VST or AU host application. This does only apply to VST or AU plugin versions.
 - **Configure...** Select this to configure extra midi input devices that are present on your system. This will show the midi settings dialog box. In the left column, check any input devices you like to use as direct input for hypercyclic. Then, when returning from the dialog, select one of the new devices in the **midi from** combo box.

This parameter can be assigned to the mouse wheel. Click on the mouse wheel button  to assign or un-assign. Almost all other parameters can be assigned to the mouse wheel this way, but only one at a time. Note that your mouse cursor has to be somewhere within the hypercyclic window boundary for this to work.

- channel (from)** | Selects the input channel (1..16) that hypercyclic will receive midi from. When set to **All** midi will be received from any channel. In case of doubt leave it to the default setting of **All**.

- midi to** | This parameter controls where hypercyclic sends its midi output to. You can choose from either the built-in options or from midi output devices on your system. The built-in options are:

- **Not connected.** Hypercyclic will not send any midi output
- **VST host.** Hypercyclic will send midi to the VST host application. This does only apply to VST plugin versions.

Note: if the host supports it, this is the preferred way of outputting midi to the host, providing lowest latency and good integration with audio rendering/bouncing functions. If your

*preferred host or plugin format (e.g. AU) does not support this, then the only other option is to send midi to a so-called midi loopback adapter. Midi sent to a loopback adapter can be received elsewhere on your system, by selecting that same loopback adapter as the midi input device. On Windows, a freely available loopback adapter is **Midi Yoke**. On Mac OSX, a builtin loopback adapter is available, called the **IAC Bus**. However, some extra latency is to be expected from the detour via the loopback adapter, and timing may fluctuate.*

- **Built-in test synth.** Midi will be sent to a test synth built-in into hypercyclic. This is a very simple device, but is useful for quick checking if hypercyclic is working correctly. You are likely to obtain better sonic results by routing midi to an external synth of your choice, e.g. a VSTi or AU synth plugin.
- **Configure...** Select this to configure extra midi output devices that are present on your system. This will show the midi settings dialog box. In the right column, check any output devices you like to use as direct output for hypercyclic. Then, when returning from the dialog, select one of the new devices in the **midi to** combo box.

channel (to) | Selects the output channel (1..16) that hypercyclic sends midi to. In case of doubt leave it to the default setting of 1.

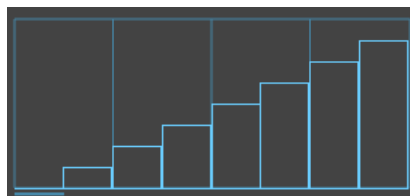
Trigger Panel




step The step size controls the time interval between successively triggered chords. The range is from once every 8 quarter notes to once every 1/64th note. In the plugin versions, the speed is synchronized with the host BPM setting. The standalone version allows to set its own BPM value.

The trigger will fire only as long as hypercyclic is receiving midi and is detecting note-on states. Or simply said, triggers fire as long as you hold down at least one midi keyboard key. Also the hypercyclic transport must be running for triggers to fire (see also the section about the transport buttons in the header panel).

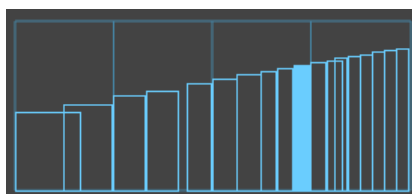
The trigger interval is visually shown in the LFO status display (top of LFO panel). The LFO status display always shows the currently playing bar. Each trigger is represented by a rectangle with a width corresponding to trigger interval and a height corresponding to the LFO value at the start of the trigger interval. It's also indicated which is the currently active trigger within the bar.



trigger interval = 1/8 note

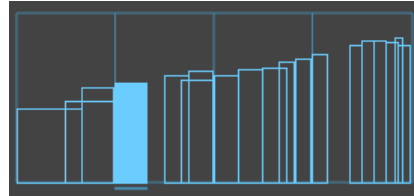
This step size parameter can be modulated. Modulation is enabled by clicking the modulation button  and selecting one of the two LFOs. If modulation is turned on, the parameter control will be disabled until you turn modulation off again. The current step size after modulation is shown in the trigger status display, which is located at the top of the trigger panel.

When modulated, the trigger interval varies over time, leading to changes in trigger rhythm. This can be used for regular accelerations/decelerations like this:



trigger interval is modulated by LFO sawtooth curve, no noise

But even more interesting, if noise is turned up at the LFO, it can be used for glitch-like effects (i.e. slight random deviations in trigger step size):



as before, but with LFO noise set to 5%

Note that the LFO waveforms are sampled each time the trigger fires, at which moment all modulated parameters receive their new value. Therefore the longer the trigger interval, the slower the updates occur to modulated parameters. This is no problem as all parameters only have an effect at note-onset (e.g. velocity, pitch), but not during the note itself. More about this in the section about the LFO panel.

velocity This parameter controls the velocity of triggered notes. The higher the parameter value, the louder the note will sound. The resulting velocity is a combination of the velocity of the midi input and this parameter.

This parameter can be modulated. The modulated value is displayed in the trigger status display.

gate The gate parameter controls the duration of the note after it has been triggered, as a percentage of the trigger interval. When set to 100% the note sounds exactly for the duration of the trigger interval. When set to zero the note will not sound at all. You can also set it to a multiple of up to 400% of the trigger interval.

Note that for complex trigger sequences, it might happen that the same midi note number is triggered multiple times in succession, and whereby the note-on event for the next note occurs before the note-off event of the previously triggered note. Or you could also say that two note-on/note-off sequences are interleaved, i.e. two note-on events occur followed by two note-off events. It is not defined by the MIDI standard how a host and/or synth will react to this. Most synths will activate multiple voices if this happens, but it can also happen that notes are unintentionally foreshortened. Note also that some hosts tend to merge interleaved notes into one single note before routing them further to other plugins. Experiment in that case by setting the gate parameter until things sound right. For this you best start by setting the gate duration very short and increase it until you get the effect you want.

This parameter can be modulated. The modulated value is displayed

| in the trigger status display.

Groove Panel



groove | The term groove refers to the practice of playing certain notes not on the beat, but slightly earlier or slightly later. This can generate a pleasant ('groovy') effect when combined with percussion or bass tracks that are tightly fitting the beat. The groove parameter controls how early or how late the triggered notes will sound. It ranges from -1 (about half a beat early) to +1 (about half a beat late).

This parameter can be modulated. The modulated value is shown in the groove status display, at the top of the groove panel.

width | The groove width parameter controls the zone around the beat starting point to which groove is applied. Only within that zone, triggers will be affected by the groove acceleration/delay. When set to 1 the zone comprises about half a beat duration before and half a beat duration after. Typically you would set it to a smaller value, affecting only those triggers that are near enough to the grooved beat. Listening and experimenting helps here.

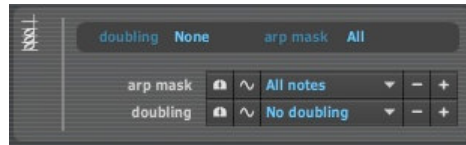
Note that applying groove to a beat will not just move the trigger in time, but affects time itself. For instance, when groove is negative (the beat will come early) hypercyclic will actually accelerate time until the position of the early beat is reached, and then slow down time again gradually to get back to normal time after the early beat has passed and before the next, non-grooved beat is due. The width parameter then controls the width of the zone during which time is compressed/expanded.

This parameter can be modulated. The modulated value is shown in the groove status display, at the top of the groove panel.

beats | The groove beats parameter controls which beats within a bar are affected by the groove settings. You can select individual beats, but also common combination of beats, such as the odd or even beats. If you select no beats at all, groove will not be active.

This parameter can be modulated. The modulated value is shown in the groove status display, at the top of the groove panel. Check out the factory preset called 'groove tour'. This modulates the beat parameter very slowly using a sawtooth curve spread over 32 bars. The effect is that you get a slow walkthrough of all values of the beat parameter which repeats every 32 bars. Varying the groove beat pattern from time to time can freshen up an otherwise static rhythm.

Arp Panel



arp mask | The arp mask parameter controls which notes of the source chord are actually triggered. Suppose we play a source chord on our keyboard consisting of three notes (a triad). If the arp mask is set to **Note 1**, only the root note (lowest) of the triad will be triggered. If the arp mask is set to **Note 2**, only the second note will be taken, etc. If the arp mask is set to **Note 1+2** both the first and the second note will be triggered. And so forth. If the arp mask is set to **All notes** the entire source chord will be used.

This parameter can be modulated. The modulated value is shown in the arp status display, at the top of the arp panel.

Note that hypercyclic is different from traditional arpeggiators, in that you will not find a parameter for setting the arpeggio pattern (up, down, etc.). Instead, you would use modulation on the arp mask parameter to obtain the same effect. For instance, applying a sawtooth LFO curve to this parameter would generate an 'up' arpeggio pattern, a triangular curve would generate an 'up-down' pattern, etc. However, since you can tweak the LFO curve into more complex forms, more complex patterns than this are possible. In particular, you can also use the LFO to control the sequence of combinations of chord notes, add random deviations, etc.

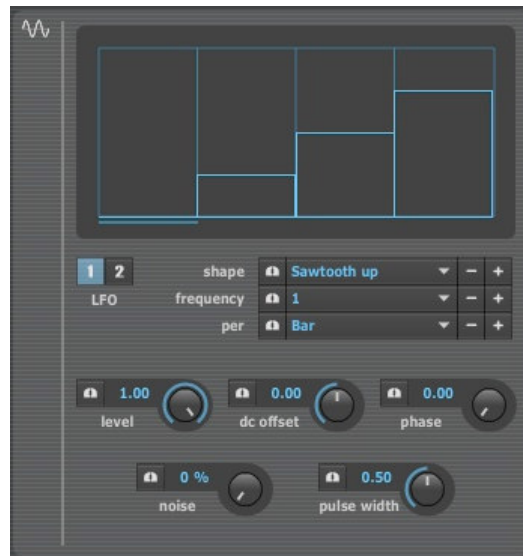
The drawback is that it takes some tweaking of LFO curves, amplitude, DC offset and such to get the desired effect. On the positive side, this experimentation can lead to less stereotypic and sometimes surprisingly pleasant results.

doubling | The doubling parameter controls whether or not extra octaves (below), fifths (above) or fourths (below) are added to the triggered chord. Combinations are also possible. The intervals generally are not very dissonant, but the fifths and fourths might interfere with certain scales and keys. So it's advised to listen first.

The doubling is applied to each note within the chord and only after the arp mask has been applied to the source chord.

This parameter can be modulated. The modulated value is shown in the arp status display, at the top of the arp panel.

LFO Panel

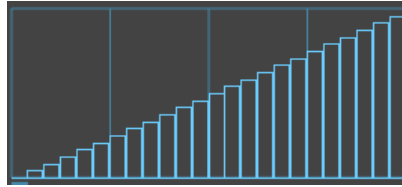


LFO | These radio buttons control which one of the two low frequency oscillators (LFO) is selected for editing. Both LFOs are continuously running, but only the selected LFO will respond to the knobs in the LFO panel.

shape | The shape parameter controls the shape of the LFO waveform. There is a choice of common waveforms, such as

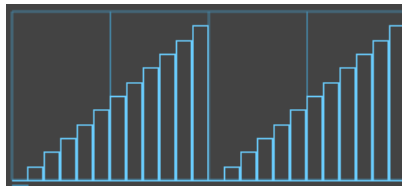
- **Sawtooth up.**
- **Sawtooth down.**
- **Triangle.**
- **Sine.**
- **Square.** Note that for this shape you can also vary the pulse width (see next)
- **Flat.** This is a constant flat DC signal, not really a waveform. Is useful with the DC offset parameter (see next) to give modulated parameters constant values, e.g. to get an idea of their ranges. Is also useful with the noise parameter (randomization, see next) to create a random waveform that's equally distributed.

frequency | The frequency is the number of times the LFO cycles through its waveform per time unit. For instance, if the frequency is set to **1** and the time unit to **Bar**, the waveform loops exactly once per bar. We can also say that the wavelength of the LFO is 1 bar in that case. You can spot this easily by looking at the LFO waveform display : you will see that the curve of the waveform takes up the entire width of the waveform display (which is always 1 bar long).



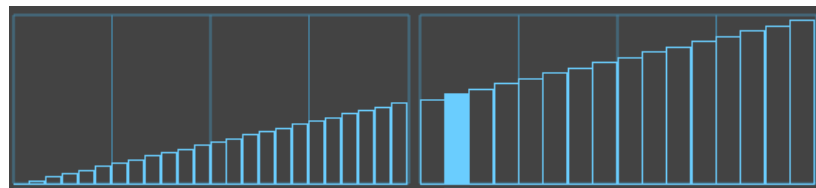
freq = 1 per bar

The frequency is always either a positive integer or an integer division of the time unit. For instance if the time unit is a bar, this means that you can have (increasingly faster) frequencies of 1 cycles or wavelengths per bar, 2 wavelengths, 3 wavelengths, etc.



freq = 2 per bar

Or in case you want slower cycles that spread over multiple bars, you can have 1/2 wavelengths per bar, 1/3 wavelengths per bar, etc.



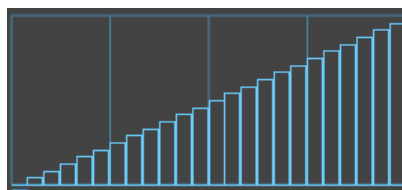
freq = 1/2 per bar

(Note: the frequency is always an harmonic of the time unit, which makes it easy to synchronize the LFO speed with song tempo and align waveform boundaries with bar or beat boundaries).

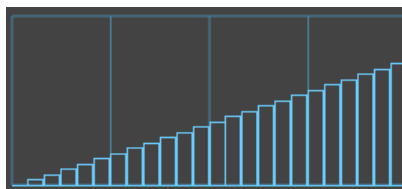
per This parameter sets the time unit for the frequency. You can set number of wavelengths per...

- **Bar**
- **Beat**
- **1/4 Note**

level The level parameter sets the amplitude for the selected LFO. The level is about scaling the maximum height of the waveform. It ranges from 0 (completely flat) to 1 (scaled out to full height). So you can use the level to flatten or raise the curve of the waveform. For instance with a sawtooth you can make the slope less steep by lowering the level.



level = 1.0



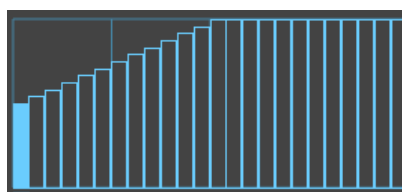
level = 0.75

Applied to modulation, this means that you can reduce the maximum value the LFO samples reach from 1.0 to something lower, e.g. 0.75. Therefore you can use it to set the ceiling of the range of modulated values that the modulated parameters will get from the LFO.

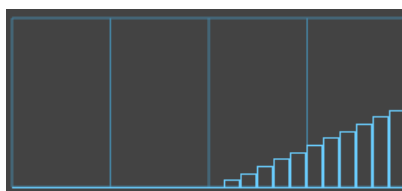
Note: it is enlightening to turn the level knob of the LFO and watch how the modulated values of the trigger, groove and/or arp parameters change in their respective status displays. You will see that the 0..1 amplitude value of the LFO gets translated into a value in the domain of those modulated parameters. For instance a value of 0.5 at the LFO, results in a value of 50 for the velocity if velocity is modulated. For this the flat waveform type is most useful, since it keeps the values constant over time.

dc offset

The DC offset parameter sets a constant amount to be added/subtracted to/from the LFO amplitude. The range is from -1 to 1. If the resulting value becomes higher than 1 it will be clipped at 1. Likewise if it's lower than 0, it will be clipped at 0.



dc offset = 0.5

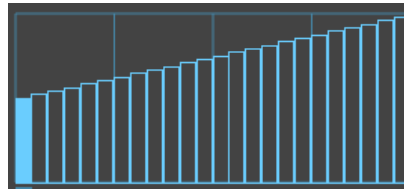


dc offset = -0.5

Applied to modulation, you can use it to control the minimum and

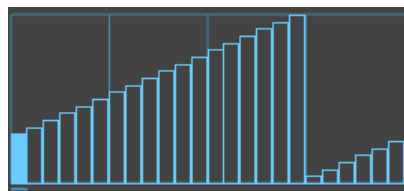
maximum amplitude the LFO samples will have. Therefore you can use it to control the floor and ceiling of the range of modulated values that the modulated parameters will get from the LFO.

Typically, DC offset is used in conjunction with the level parameter to fit the slope of the curve within the range. For instance, you can raise the DC offset to 0.5 and decrease the level to 0.5 to get a slope that still fits the window ceiling vertically, but which starts at 0.5.



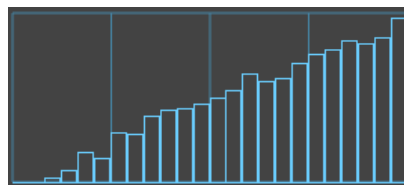
dc offset = 0.5, level = 0.5

phase The phase parameter rotates the LFO waveform in time. The range is from 0 to 1. The higher the value of the parameter the more waveform is shifted to the left in time. Use it to align waveforms with key events in your music (e.g. beat onsets).



phase = 0.25

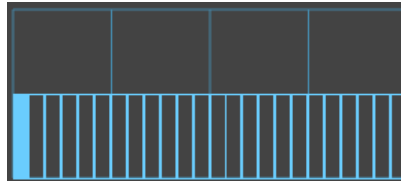
noise The noise parameter adds a controlled amount of random deviation to the amplitude of the LFO. When set to 0, there is no deviation. When set to 100%, the deviation is maximized. The deviating values are always clipped between 0 and 1.



waveform = sawtooth up, noise = 10%

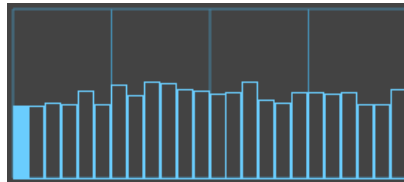
At low noise levels, you will still recognize the original waveform shape, only slightly distorted.

If it is just pure randomness that you need, you can best start from the **flat** waveform. First set its level to the midpoint of the desired value.



flat waveform, level = 0.5, noise = 0%

Then add noise to get controlled deviation around the midpoint.



flat waveform, level = 0.5, noise = 10%

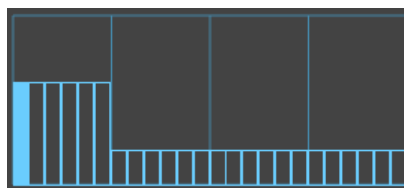
pulse width

The pulse width parameter applies only when the waveform is set to a square wave. In that case this parameter sets the width of the peak of the square wave.



waveform = square, level = 1.0, pulse width = 0.25

This is a very useful waveform when you need to alternate between two steady LFO values. Experiment with level and DC offset settings to set the exact amplitude for both the pulse and the gap between pulses.



waveform = square, level = 0.4, DC offset = 0.2, pulse width = 0.25

Synth Panel



gain | The gain parameter controls the output volume of the built-in synth. It only applies if you route midi output to the built-in synth.

Header Panel



preset | The preset control allows you to change the current preset program. Tip: assign this parameter to the mouse wheel for quick auditioning of presets.

transport buttons | The stop/start transport buttons can be used to control hypercyclic transport. The hypercyclic transport can be in one of three states:

- **Stopped.** All trigger activity is stopped. Starting the host transport does not start hypercyclic. Use this if you want to stop hypercyclic completely and not be synced to the host transport.
- **Armed.** Trigger activity is stopped, but the transport is now a slave to the host transport. If you start/stop the host transport, hypercyclic transport will follow. The armed state is recognizable by the flashing play button. This is the default state.
- **Playing.** Trigger activity is ongoing. Recognizable by the continuously highlighted play button.

The above applies to the plugin versions. Standalone versions however can also be synchronized to an external midi input device, if that device sends midi synchronization events. Hypercyclic recognizes midi start, stop and song position events. The hypercyclic transport needs to be in the armed state for it to react to midi synchronization events.

The stop button has an additional function. When you press the stop button while already in the stopped state, it will send an all-notes-off command to the current midi output device. Use this as a panic button.

bpm, time signature, song position | For plugin versions this shows the current host bpm and time signature settings. It also shows the current host song position in bars, beats. For the standalone version, you can edit both the bpm and the time signature fields, by clicking on them.

file button | Clicking on the file button shows a pop-up menu with storage-related functions:

- **Load Preset Bank...** Replaces the current preset bank with a preset bank on disk. The bank is always in VST .fxb format. Banks are binary compatible and can be exchanged across all platforms (Windows, Mac, Linux) and all formats (VST, AU, standalone)
- **Load Preset...** Replaces the current preset with a preset on disk. The preset is always in VST .fxp format. Presets are binary compatible and can be exchanged across all platforms and

formats

- **Save Preset Bank...** Saves current preset bank to disk in .fxb format.
- **Save Preset...** Saves current preset to disk in .fxp format. Tip: you can use the save/load preset functions as a copy/paste function, by first saving a preset to disk, then changing current preset no. and reloading the preset into the new preset slot.
- **Rename Preset...** Change name of current preset

help button

Clicking on the help button shows a pop-up menu with help functions:

- **Help...** Opens the central help panel. You can also open/close this panel by clicking on the small arrow at the top left of the central panel.
- **Hypercyclic home.** Navigates to the hypercyclic home page using the system's default web browser
- **Online manual.** Navigates to the hypercyclic online manual page using the system's default web browser
- **Latest updates.** Navigates to the hypercyclic online download page using the system's default web browser
- **Download presets.** Navigates to the hypercyclic online preset download page using the system's default web browser
- **About...** Opens the central help panel and shows about box with license information

Standalone Pull-down Menus



File menu | Please see the header panel, file button.

Settings menu

Allows you to control various settings:

- **Audio Settings...** For standalone version only : shows the audio settings dialog. Here you can select your sound card, select input/output channels and set the sample rate. On Windows platforms, ASIO devices are supported and recommended.
- **Midi Settings...** Allows you to configure midi devices available for input and/or output. Please see the chapter about the Midi Panel for more information.
- **Restore Defaults** For standalone version only : clears current preset bank to default factory presets. Clears also current midi settings. Audio settings however are not affected.

Please note: the standalone version keeps its current settings and presets in a configuration file which resides at the usual place at each respective platform. In case of problems you can delete this file in order to revert to factory defaults.

- **Windows Vista.**
C:\Users\YourName\AppData\Roaming\hypercyclic
- **Windows XP.** *C:\Documents and settings\YourName\Application Data\hypercyclic*
- **Mac OSX.** */users/YourName/library/preferences/hypercyclic*
- **Linux Ubuntu** */home/YourName/.hypercyclic/hypercyclic*

The plugin versions store their settings in their respective host project files.

Help menu | Please see the header panel, help button.

Setting up hypercyclic with your host application

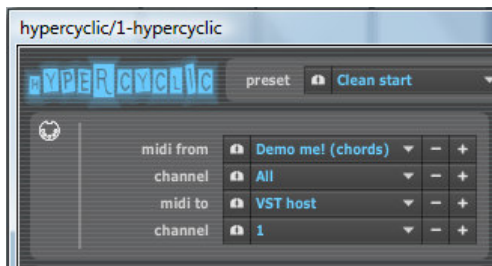
Ableton Live 6.0.7 (Windows, Mac OSX)



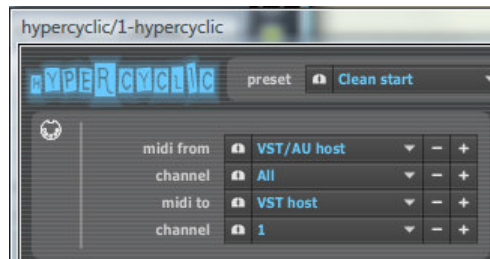
- copy hypercyclic.dll (or hypercyclic.vst on OSX) into your vst folder
- open Ableton Live with a blank set
- delete the default tracks **Audio** and **MIDI**
- add a midi track and rename to **hypercyclic**
- set **Monitor** to **In** (if you want to play with an external keyboard; set to **Auto** when playing MIDI clips)
- drag the hypercyclic VST onto the midi track



- add a second midi track and rename to **synth**
- drag a synth of your choice onto the track
- set the combo **MIDI From** to **1-hypercyclic**
- change the combo immediately below from **Post-FX** to **hypercyclic**
- set **Monitor** to **In**

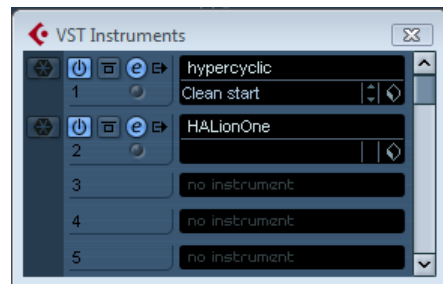


- in hypercyclic change **midi to** to **VST host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- in Live, press the play transport button. You should hear the demo chords playing via your synth.




- in hypercyclic, change **midi from** to **VST/AU host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- in Live, press the play transport button.
- play your external keyboard. You should hear what you play processed by hypercyclic and sent to your synth
- in Live, on the hypercyclic track, set **Monitor** to **Auto**
- add a midi clip to the hypercyclic track
- start the Live midi clip. You should hear the midi clip processed by hypercyclic and sent to your synth.

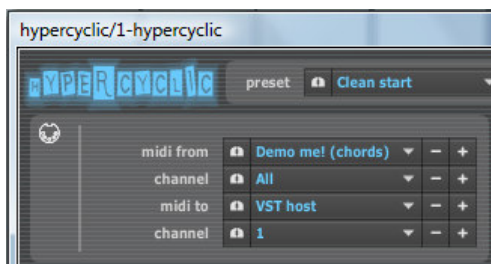
Cubase 4.0.3 (Windows, Mac OSX)




- copy hypercyclic.dll (or hypercyclic.vst on OSX) into your vst folder
- open Cubase
- select **Empty** as project type
- hit F11 to bring up the **VST Instruments** list
- add **hypercyclic** as first VST instrument
- answer **create** when asked to associate a midi track with this instrument
- add your synth of choice as second VST instrument (e.g. Halion)
- answer **create** when asked to associate a midi track with this instrument



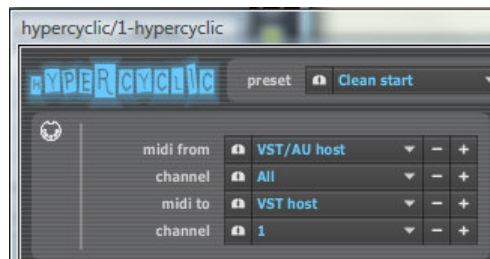
- In Cubase, click on the second midi track, the one that is associated with your synth
- click on the input symbol  for this track
- change it from **All Midi Inputs** to **hypercyclic**
- still on this synth track, click on the speaker symbol, and make sure it's orange
- click on the hypercyclic midi track




- click on the edit symbol  on the hypercyclic track
- the hypercyclic UI should appear
- set **midi to** to **VST host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- hit the transport button in Cubase. You should hear the

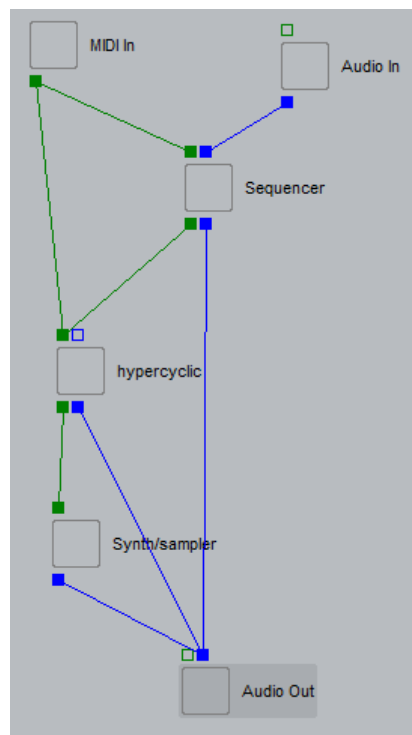
demo chords playing through your synth

- if you don't hear anything and you are using Halion : don't forget to select a preset for Halion

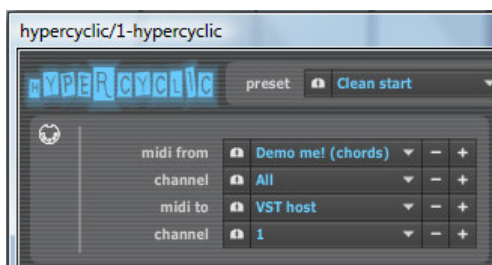


- click on the edit symbol  on the hypercyclic track
- the hypercyclic UI should appear
- set **midi from** to **VST/AU host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- hit the transport button in Cubase.
- play on your external keyboard : you should hear what you play processed by hypercyclic and sent to your synth
- add a midi clip to the hypercyclic track and start the transport from the beginning of that clip : you should hear the midi clip processed by hypercyclic and sent to your synth

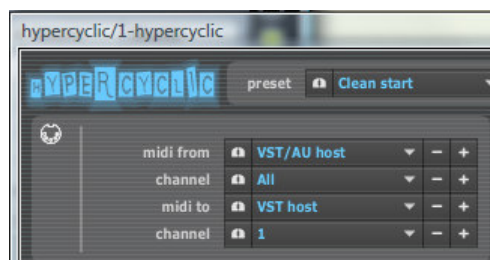
Energy XT2 (Windows, Linux)



- copy hypercyclic.dll (or hypercyclic.so on Linux) into your vst folder
- open EnergyXT2
- bring up the Comps view
- delete all samplers and sequencers (leave midi input, audio input/output)
- from the VST plugin list, drag **hypercyclic** to the comps view
- from the VST plugin or comps list, drag your synth of choice as second instrument to the comps view
- from the comps list, drag a new sequencer to the comps view
- wire everything together as in the illustration to the left



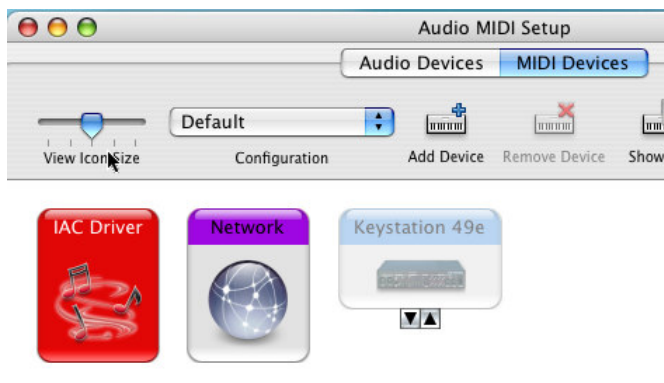
- in comps view double click the hypercyclic component
- the hypercyclic UI should appear
- set **midi to** to **VST host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- hit the transport button in EnergyXT. You should hear the demo chords playing through your synth



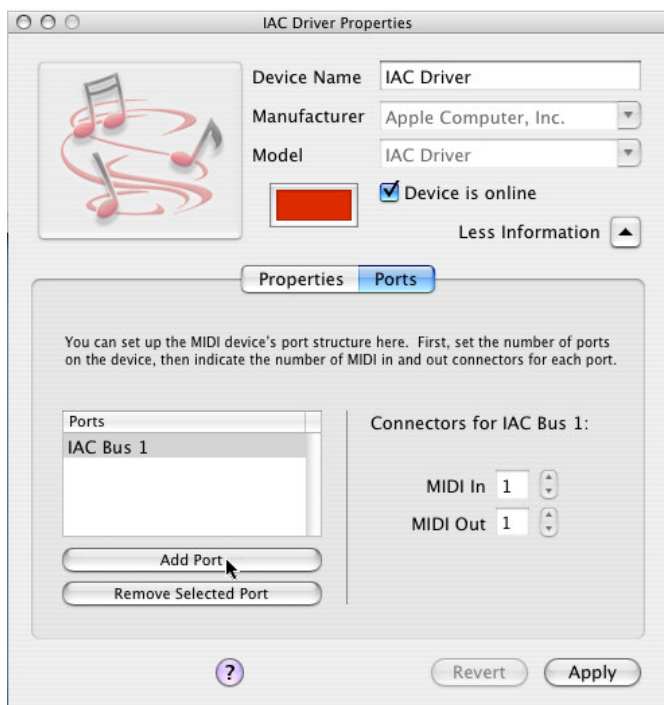
- double click again on the hypercyclic component
- the hypercyclic UI should appear
- set **midi from** to **VST/AU host**
- make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)
- hit the transport button in EnergyXT2.

- play on your external keyboard : you should hear what you play processed by hypercyclic and sent to your synth (assuming your keyboard was already set up as midi input device in EnergyXT2)
- in the sequencer component, add a midi clip to the hypercyclic sequencer track and start the transport from the beginning of that clip : you should hear the midi clip processed by hypercyclic and sent to your synth

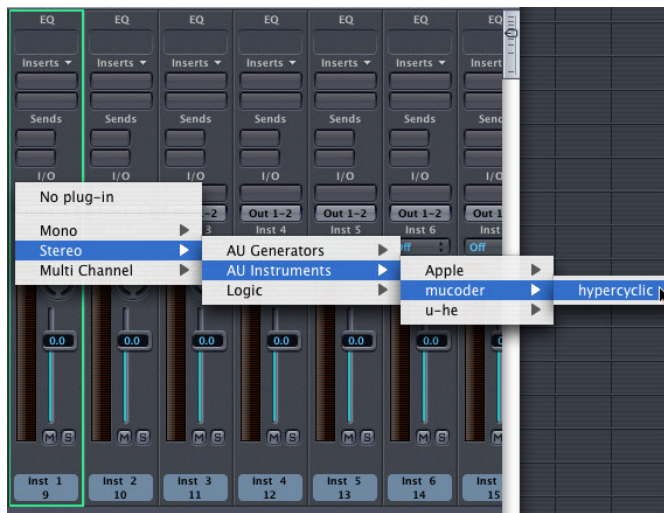
Logic 7.2 Express (Mac OSX)



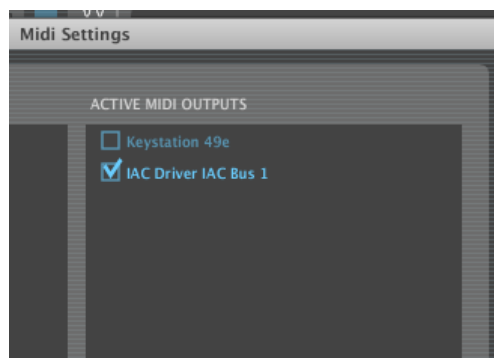
- in Finder, open **Applications, Utilities, Audio Midi setup**
- click the **Midi Devices** tab
- double click **IAC driver**



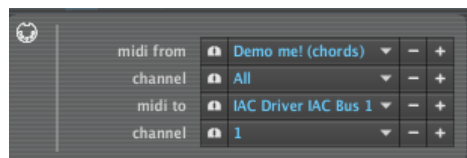
- click **Ports** tab
- if it says **No Available Ports** then click **Add Port**
- You should see **IAC Bus 1** as new port
- Note: this creates a midi loopback port. This can be used to route midi output from hypercyclic back into Logic



- copy hypercyclic.component into your AU component folder
- open Logic Express
- double click on Instrument 1. The mixer should appear
- click and hold on the I/O button for Instrument 1 until the instrument selection pop-up menu appears.
- add **hypercyclic** as AU instrument, as depicted to the left
- add your synth of choice as second VST instrument (e.g. Halion)



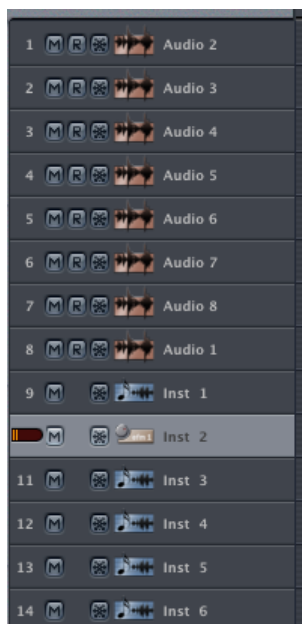
- the hypercyclic UI should have appeared. Click the **midi to** combobox and select **Configure..**
- the **Midi Settings** dialog should appear. In the right column select **IAC driver IAC bus 1** as output device
- close the dialog



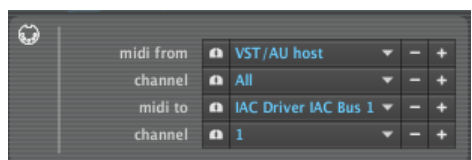
- In hypercyclic, in the **midi to** combo box, select **IAC driver IAC bus 1**
- before you leave the hypercyclic UI, make sure the play button is armed (flashing) in hypercyclic (if not arm it by pressing it once)



- Go back to the Logic mixer
- Click the I/O button for Instrument 2 and select a synth of your choice (EFM1 in this example)



- Go back to the Logic arrangement window
- Hit the transport button in Logic.
- Click on Instrument 2 (your synth) in the arrangement window in order to monitor it and feed it midi
- You should hear the hypercyclic demo chords being sent to your synth



- Go back to the hypercyclic UI
- Change **midi from** to **VST/AU host**
- Go back to the Logic arrangement window
- Add a midi clip to the hypercyclic track
- Hit the transport button in Logic, and make sure transport starts at the beginning of the midi clip.

Preferably set the clip to loop. We assume also that the hypercyclic transport was armed correctly.

- Click on Instrument 1 in the arrangement window (the hypercyclic instrument)
- Then, while holding the shift key (!), click on Instrument 2 in the arrangement window in order to monitor it and feed it midi
- You should hear the midi clip being processed by hypercyclic and sent to your synth