

# LFOTool

a unique FX / utility plug-in  
for VST, AudioUnit, and AAX hosts

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**LFOTool Plug-in  
for Windows and Macintosh OS X**

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**W W W . X F E R R E C O R D S . C O M**

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## 2. Introduction

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LFOTool is a plug-in which is useful for achieving a variety of FX – AutoPan, Tremolo, simulation of sidechain-compressor 'pumping', and autofilter FX. 89 different filter types offer a wide variety of sonic permutations (combs/phaser/flanger/ringmod/downsampling/formant filters and more).

LFOTool requires a VST or AudioUnit host to operate – it runs inside your host program (e.g. Ableton Live™, Apple Logic™, Steinberg Cubase™, Image-Line FL Studio™, Energy XT™, Cockos Reaper, Garageband, etc.) .

### Getting in touch

If you experience any problems while using this plug-in, or you just wish to pass on your comments regarding LFOTool or this manual, or links to cool tunes made with LFOTool, you can email the developer directly at: [steve@xferrecords.com](mailto:steve@xferrecords.com).

### LFOTool has no copy protection

Here at Xfer we try to make copy protection the last thing to interrupt you from making music, so there is none – however it is not free software! If you happened to acquire this software from a less-than-reputable source, you should be aware this is not free software, but priced to be very affordable to everyone! Support the developer, and he will support you in return!

# Installing LFOTool

- **Installing on the PC (Windows)**

Run the Installer .exe. The installer will ask you to choose which plug-in versions you would like to install (vst, vst\_x64, and AAX for ProTools). In the case of the VST, make sure you are selecting the folder location which your host program looks to for VST plugins (consult your host preferences, or documentation, if unsure of this VST folder location).

- **Installing on Macintosh OS X**

Run the .pkg installer on the disk image (dmg).

The installer will install:

**LFOTool.vst** to /Library/Audio/Plug-Ins/VST

**LFOTool.component** to /Library/Audio/Plug-Ins/Components/

**LFOTool\_MFX.component** to /Library/Audio/Plug-Ins/Components/

**LFOTool.aaxplugin** to /Library/Application Support/Avid/Audio/Plug-Ins/

**LFOTool Presets** folder to /Library/Audio/Presets/Xfer Records/

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- **Uninstalling LFOTool**

(Windows)

- Delete the LFOTool.dll and/or LFOTool\_x64.dll plug-in files from the location(s) you chose on install.
- Delete LFOTool Presets folder from C:/users/%USERNAME%/documents/xfer
- Delete LFOTool.aaxplugin (if you selected it on install) from C:/Program Files/Common Files/Avid/Audio/Plug-Ins

(OS X) you can manually delete the files mentioned above in the “Installing on Macintosh OSX” section, or copy the following long line of text and paste it into /Applications/Utilities/Terminal.app:

```
sudo rm -rf /Library/Audio/Presets/Xfer\ Records/LFOTool\ Presets; rm -rf /Library/Audio/Plug-Ins/VST/LFOTool.vst; rm -rf /Library/Audio/Plug-Ins/Components/LFOTool.component; rm -rf /Library/Audio/Plug-Ins/Components/LFOTool_MFX.component; rm -rf /Library/Application Support/Avid/Audio/Plug-Ins/LFOTool.aaxplugin
```

# 3. Connecting LFOTool

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## Step 1: Add LFOTool

LFOTool should be added to an Instrument (MIDI) Track. You need to be able to route MIDI to LFOTool so you can have it trigger chords. This is the same procedure you would follow adding any VST Instrument in your host. If you are not sure how to do this, refer to your host documentation or send us an email.

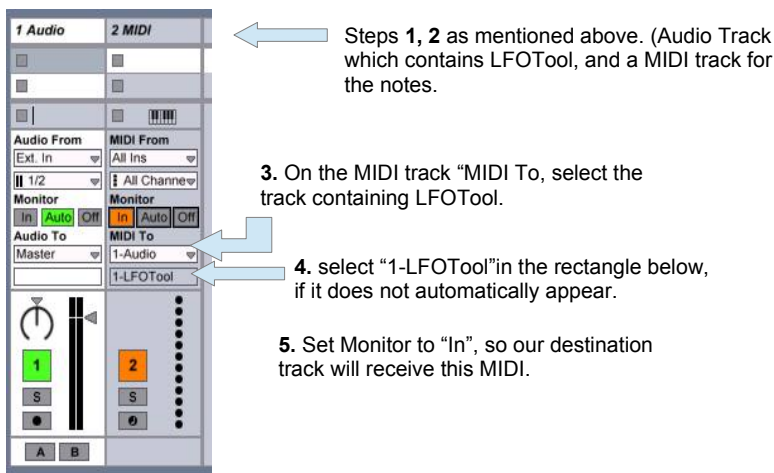
## Step 2 (Optional/Advanced) Route MIDI to LFOTool

LFOTool has some advanced features which allow you to play MIDI notes to control it. For example, if you want to use LFOTool like an envelope or to switch between various LFO routings via MIDI notes, you may wish to Route MIDI to LFO tool.

### MIDI-to-LFOTool Connection, Example: Ableton Live

1. Insert LFOTool on the audio track you wish to process, by dragging LFOTool (or double-clicking it) from the Plugins browser in Live.
2. Create a MIDI Track. This is the track where notes will control LFO Tool.
3. on the MIDI Track, click the “MIDI To” rectangle, and select the track containing LFO Tool.
4. The rectangle below also needs to display LFOTool, which will happen automatically if the destination is an audio track.
5. Click Monitor “IN” on the MIDI track (or record-enable it) to be able to play your MIDI Controller.

See diagram below:



## MIDI-To-LFOTool, Example: Logic Audio

You can place LFOTool as an effect insert in Logic and use it for basic LFO functionality, however in Logic, there is no method with which to route MIDI notes to the insert-FX plug-in. Because of this limitation in Logic, LFOTool will additionally appear as an "AU Midi Effect" where you typically add instruments:

1. Track menu->New->Software Instrument...
2. Where you normally add an Instrument (e.g. EVP88), select **AU MIDI-controlled Effects->Xfer Records->LFOTool->Stereo**.
3. The LFOTool GUI should appear. In the top-right just above the LFOTool GUI you will see "Side Chain: None". Click here and select the source audio (or instrument) track you wish to process with LFO Tool.
4. Be sure to mute the original track on its fader, so you don't hear the dry signal!

## MIDI FX version of LFOTool (Logic X)

There is a MIDI FX version of LFOTool which can be used for transmitting MIDI CC to instruments placed after it. LFOToolMFX will appear where you insert other MIDI FX (e.g. the stock ones that come with Logic X, or Xfer Cthulhu) atop an Instrument Track fader. The parameters which do not apply to MIDI FX (filter settings, volume/pan/split) will all not be visible. Be sure to enable CC: in the lower-left, and a MIDI out depth in the top-right slider labelled 'midi'. Refer to your destination synth manual for how to learn or receive a MIDI CC.

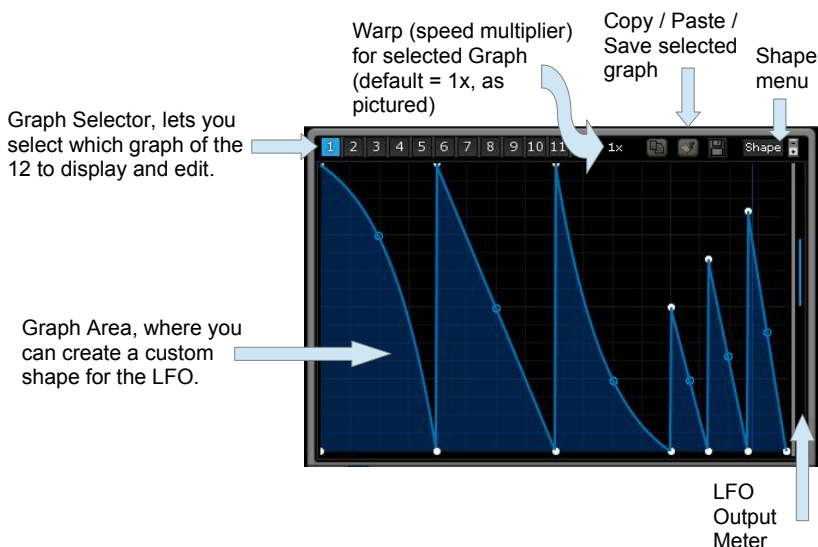


# 4. Operating LFOTool

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## Working with Graphs

The heart of LFO Tool lies in the graph, where you can sculpt a up to 12 custom shapes for your LFO.



The **Graph Selector**, as mentioned in the diagram above, allows you to select which graph to display and edit. Please note: clicking the Graph Selector does not change the sound you hear, it is simply changing which graph you are viewing and editing. To change what you hear, see LFO Routing (the next chapter).

The **Warp Multiplier** allows the current selected graph to play faster or slower than the global LFO Rate. This is useful for having certain graphs which sound fast/slow without having to adjust the global LFO Rate, or avoid drawing a repeating shape pattern across the graph. Please note that the LFO will “restart” at the end of the global LFO Rate time period (slider in the lower-left below the graph).

The **Copy/Paste** buttons allow you to duplicate your graph to other Graph locations (1 – 12). This is useful for creating variations. The **Save** button (disk icon) allows you to store your own creations to

the Shape Menu.

Clicking the **Shape** button will bring up a Menu of preset graph shapes. Selecting one will replace the current-selected Graph with a default shape. This is useful for getting a “starting point” for an LFO shape quickly.

## Graph Edit – Create your own LFO Shape

The graph edit area allows you to add/remove points and adjust tension curves:

- **Double-clicking** will add a point to the graph and the location of the mouse cursor.
- **Double-clicking a point** (or ctrl-click) will remove the point
- **Alt-clicking** / dragging will snap a point to the Grid Size.
- **Shift-clicking** will add points to create a horizontal line segment at the Grid Size (result is like a step-sequencer)

## Graph Edit – adjusting curves

Each line segment has a curve. A hollow point will be visible if the line-segment is not vertical or horizontal. This hollow point can be clicked to adjust the curve of the segment. Alt-clicking a hollow point will adjust the curve for all segments.

# 5. LFO Controls

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These controls adjust how all graphs will get played back.

## Rate Control

This is the LFO Rate, or the amount of time it takes to play the graph. There are four switches to the left of the LFO:

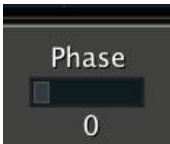


- **Musical Note Icon:** This determines whether the LFO time is based on the Host program Tempo when enabled (on = BPM), or else free (off = Hz).
- **Anchor:** If the aforementioned Musical Note Icon is on (blue), the Anchor will determine if the LFO position is fixed (anchored) to the song position. The difference may not be obvious at first, but if you are adjusting the LFO Rate control with Anchor is on, you'll notice that the position of playback will likely “jump” because LFOTool is anchoring each LFO time to be in-phase. Playback is guaranteed to sound the same each time this way. However, you may wish to be able to change the rate without the position jumping – in this case turn the Anchor off.
- **Dot (.) and Triplet (3) icons:** if the Musical Note Icon is on (blue), these switches determine whether or not to include dotted and triplet times in the LFO Rate control.

# Swing Control



This control makes the LFO “Swing”. When this parameter is raised or lowered, you will notice the playback of the LFO will be alternating faster/slower on each playback. A typical use would be with LFO time set to 1/8 or 1/16<sup>th</sup>, though it operates at any LFO Rate. Please note: **Both the Anchor and Musical Note Icon (BPM) must be enabled for the Swing to take effect.**



# Phase Control

The Phase control will adjust the phase of the graphs. You will notice the graph blue-background shading will move left in relation to the line-segments. This background shading is displaying what will get output of the LFO.



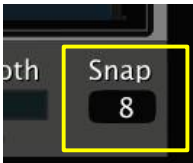
# PWM Control

The PWM control will modify the line segments rendering over time, squeezing them together the left or right. Similar to the Phase control, you will notice the graph blue-background shading will adjust. This background shading is displaying what will get output of the LFO.

## Smooth Control



The Smooth control makes the LFO output more gradual. This is useful if you are hearing clicks from extreme vertical changes in the graph.



## Snap Control

Snap will adjust the Grid Size visible in the Graph area. This is useful when Alt- or Shift-clicking on the graph, in order to snap points to a certain division of the graph.

## 6. Additional Controls

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### Offset Control

The Offset numeric control on the left-edge of the plugin window offers a “sync offset” in a number of samples, from -4096 to 4096. Shift-click to adjust this value with a finer resolution.

This value will make LFOTool run 'early' (negative) or 'late' (positive number) versus the timing information provided by the host. Some hosts will not compensate for latency induced from other plugins in some situations. However your first approach would be to make sure your host sequencer is up-to-date. Also, in some situations using the MIDI “note retrigger” feature will give you the precise timing you want.



The Oscill control is a small oscilloscope. When enabled, a waveform will draw on top of the LFO graph area. The waveform will draw twice, once for input/unprocessed (grey) and once for processed/output (red). These colors can be changed if desired in the config file, see the last page of the manual for more information.

## 7. LFO Routing

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There are 5 destinations for the LFO, as shown to the left:

**Cut** - Filter Cutoff frequency

**Res** - Filter Resonance

**Vol** - Volume

**Pan** - Stereo Panning

**Var** - Filter Variable Parameter

The Numbers (leftmost) determine which of the 12 LFO Graphs will be the source graph for each given destination.

The sliders determine the depth, in other words how much the graph is applied. The “depth” slider at the bottom will **scale** the above slider amounts. This is useful for automating in-host for momentary depth changes (such as bypassing, or partially reducing the amount of the effect) without

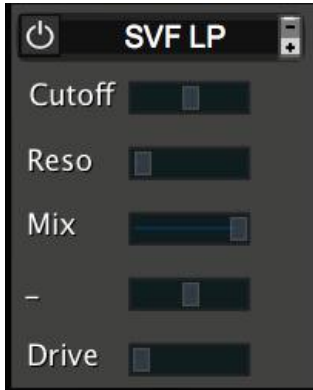
losing your assigned “main” amount(s).

The blue dots above the sliders are a meter of sorts, showing you the 'final value' for each of the four given parameters. e.g. “Final Cutoff Value” after the LFO output(with depth slider above) is combined with the Cutoff slider itself.

**Please note:** to hear the Cut/Res have an audible effect on your signal, the SVF must be enabled (see next chapter).

## 8. Filter module

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### Power button

The power button in the top-left of the filter module determines whether the filter is enabled or not. The Power Button engages or disables the Filter and must be on in order to hear filters.

### Filter Type

Clicking the filter type (text menu) brings up a pop-up menu where you can select a filter type. Please refer to the following page for a description of the various filter types.

### Cutoff Slider

The cutoff slider adjusts the base frequency for the filter cutoff. This can be useful for tweaking the frequency range that the filter is operating in when the LFO Assignment for Cut is in use.

### Resonance Slider

Similar to cutoff, this slider adjusts the base amount of resonance for the filter.



## Mix Slider

This sets the wet/dry amount for the filter. Typically you will want mix left at maximum (100% wet). However for some situations, such as Flanger/Phaser/Comb/Downsampling it is useful to be able to adjust the wet-dry balance.

## Var Slider

The Var knob (says “-” in the picture above) is a Variable parameter, meaning has a different function depending on the filter type chosen. For instance in the “dual” filters, this knob is a control for the second filter's cutoff. See the following table for a description of the Var parameter based on Filter Type chosen.

## Drive Slider

The Drive Slider distorts the input to the filter in most situations. The Drive is inside the filter in other situations (e.g., SVF). Either way, the Drive Slider makes things sound driven or overloaded.

## Filter Types and Var parameter function

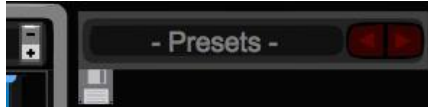
<u>Filter Type</u>	<u>Description</u>	<u>Var Function</u>
Mg 6/12/18/24	Ladder-Style Lowpass filter	“Fat” amount
Low 6/12/18/24	State-Variable Lowpass Filter (SVF)	“Fat” amount
High 6/12/18/24	State-Variable Hipass Filter (SVF)	“Fat” amount
Band/Peak/Notch		“Fat” amount
LH/LB/LP/LN/HB/ HP/HN/BP/BN/ PP/PN/NN	Dual SVF filters: first letter is primary, 2 <sup>nd</sup> letter is secondary (e.g. BP = Band+Peak). Reso is linked, second cutoff is the Var param.	Cutoff Frequency “2” (for the 2nd of the two filters)
LBH/LPH/LNH/BP N	Morphing SVF filters (e.g. Lowpass<->Bandpass<->Hipass)	Morph (between the three filter states)

CombL /FlangeL / PhaseL	Comb/Flanger/Phaser with a Lowpass filter in the internal feedback circuit. [***]	LP Cutoff
CombH /FlangeH / PhaseH	Comb/Flanger/Phaser with a Hipass filter in the internal feedback circuit.[***]	HP Cutoff (feedback filter)
CombHL / Flange HL / Phase HL	Comb/Flanger/Phaser with a Hipass + Lowpass filter in the internal feedback circuit. [***]	HL Width (band separation)
EQ	Shelf (L / H) / Peak EQ	dB Gain
Combs/ Allpasses/ Reverb	(varied)	Damping
Formant 1-3	Formant 'vowel' filters. Cutoff knob morphs between the formants	Formant shift

**[\*\*\*] = for best result for Flanges menu items, set mix knob at 50%**

## 9. Presets

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### Preset Menu

The Presets menu allows you to quick way to select the presets from the “LFOTool Presets” folder on your hard disk.

Once you have selected a preset, the red arrows to the right allow you to navigate to other presets in that subfolder.

### Disk Icon – Save your own presets

The Disk icon allows you to save your own presets to the LFOTool folder so they appear in the menu (or elsewhere, if you want). A dialog window will appear prompting you to type a name and location for your preset. You may create your own subfolders inside “LFOTool Presets” folder, if you desire.

### If you don't see any presets in the list

LFOTool was unable to locate the “LFOTool Presets” folder. This is installed to:

**OSX:** (command-shift-G in Finder to go to folder, and type or paste:

/Library/Audio/Presets/Xfer Records/

**Windows:** <C:/Users/%USERNAME%/Documents/Xfer/>

However simply Re-installing LFOTool would probably be the easiest remedy.



## Shape Menu

The Shape menu along the top will allow you to load or save a single LFO shape. This is useful for changing/initializing the visible LFO graph (blue shape) without losing the rest of your settings.

Note: to appear in this menu, the saved shapes belong in the “Shapes” subfolder inside the LFOTool Presets folder.

# 10.MIDI In (MIDI to LFOTool)

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## Sending MIDI To LFOTool



LFOTool has the ability to receive MIDI notes. The manner of doing this routing varies between different host programs. You may wish to search or consult your owner's manual for "how to route MIDI to a VST effect".

## Change graphs via MIDI notes\*

The lowest 5 octaves of the MIDI keyboard / Piano roll will allow you to choose which graph affects the different destinations. This is useful for "playing" specific changes between LFO shape-patterns:

MIDI Notes 0 thru 11 will select the LFO Routing source for Cutoff.

MIDI Notes 12 thru 23 will select the LFO Routing source for Reso.

MIDI Notes 24 thru 35 will select the LFO Routing source for Volume.

MIDI Notes 36 thru 47 will select the LFO Routing source for Pan.

MIDI Notes 48 thru 59 will select the LFO Routing source for Var.

\* If one or more of the following switches/functions: Vel->PWM, Note->Rate, or Note->Cutoff, are enabled, the graph changing function will be overridden, in other words the above graph-changing will not take place.

## Altering LFO playback via MIDI Notes

There are 5 different options as pictured above with Musical note icons. **These determine how LFOTool will respond to MIDI notes 60 and above:**

- **Note Retrigger** – The LFO will “start over” each time a note is received. This is useful for creating rhythmic phrase-patterns, or using LFOTool much like an envelope. Clicking Note Retrigger a second time will display the word “Env”. This in fact is much more like an Envelope, as the LFO will stop at the end of the cycle length instead of looping back.
- **Note Gate** – The LFO will stop when a Note Off is received (when a note is let go). This is useful for having momentary parts where the LFO is being heard, as determined by the notes/note durations you send.
- **Vel -> PWM** – The velocity of incoming notes will affect the PWM slider. I'm really not sure how useful this is, to be honest, but I wanted it at one point..
- **Note -> Rate** – The note number (0-127) of the incoming note will adjust the Rate slider. This is useful for 'performing' various LFO speeds.
- **Note -> Cutoff** – The note number (0-127) of the incoming note will adjust the the Cutoff slider. This is useful for

The above 5 switches can be used individually, or together.

# 11.MIDI Out (sending MIDI cc From LFOTool)

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LFOTool can send out a MIDI cc message which makes it possible to control external synthesizers or other softsynths from the output of LFO Tool. The **Cutoff output** is used (as can be visualized as the blue dot above the cut slider in LFO Routing panel) and a cc is sent every time this value changes (well, changes more than 1/128<sup>th</sup>, as MIDI cc is limited to a 0-127 resolution).

Due to host limitations, it is not possible to send MIDI CC in the AudioUnits standard “FX” version of LFOTool. For sending MIDI in Logic X, you can use the MIDI FX version of LFOTool which will appear in the MIDI FX section above instrument faders..

## MIDI out: routing to host

To send MIDI cc Out:



1) route MIDI From LFO Tool to your desired destination.

For example, in Ableton Live:

On your desired destination track, you need to select “MIDI From” and pick the track containing LFOTool (1-Audio in the case here). If the source track containing LFOTool is a MIDI track (instrument) You may need to select LFOTool in 2<sup>nd</sup> rectangle below, as shown. Lastly, you must enable Monitor “IN” so the destination track will listen to MIDI from LFOTool.

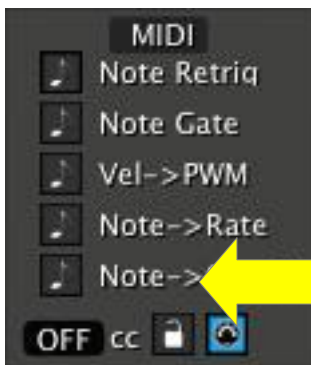
- 2) change “CC Out” from Off to a number.
- 3) Assign LFO->Cutoff slider (it the top-right of the plugin)

(79 is a recommended value, as this reaches 0-127 assuming your cutoff slider in top-left is centered)..

## MIDI cc value: 'Cutoff' is the value sent!

LFOTool will output the “Cutoff” value as a MIDI CC, so the Cutoff slider in top-left and the LFO->Cut in top right will influence the CC value which is output: If you want the graph to send out the value as you might expect (lowest point on graph = 0, highest point in graph = 127), it is recommended to set the Cutoff slider to 50% in the top-left of the plug-in, and set LFO->Cut slider in the top-right of the plugin to 79.

## MIDI CC LOCK



The Lock Icon prevents the MIDI CC numeric assignment (to left of lock) from changing when you switch Presets. This prevents you from having to repeatedly set the CC value assignment if you choose to browse through presets.

## MIDI Drag Export



A time-saving drag-export of the MIDI graph is possible by dragging the blue MIDI icon to a MIDI track in your host. Make sure the CC value has been raised (shows “off” in the picture above) and you have a MIDI CC depth in the top-right of LFOTool.



## Config File / Advanced Settings

For power users, there is a hand-editable config file named "LFOToolConfig.txt" is located in the LFOTool presets folder (see earlier for location of this file). This allows for some features not available from the LFOTool interface. Please note these features are global and will affect saved projects, so editing is not encouraged. The text is included below as a reference. Edit the numbers inside the brackets in the file and re-save to change settings.

If editing the size of the default width/height, For best results, it is recommended to keep the ratio about the same, in other words make the height slightly less than half the width (48.5% is the default ratio).

```
[1] thin CC's that are LESS than this many samples apart (1
= max MIDI data)
[1] do not insert PPQ every event on MIDI drag-export
[Sidechain/Sidechain-1.fxp] default preset, relative to this
config file e.g. /Sidechain/Sidechain-1.fxp
[0] Scope Enabled by default (0 or 1)
[4] update rate in milliseconds for graphic redraw: default
is 4 which is fast. less than 4 is not advised. Greater than
200 also not recommended, as the updates will be less than 5
FPS)
[0] MIDI notes 0-59 (to change graph assignments) have
priority over retrigger, etc.
[708] default plug-in width in pixels (708 is LFOTool v1
default)
[343] default plug-in height in pixels (343 is LFOTool v1
default)
[255][128][128][128] RGBA for scope waveform display
(255,128,128,128 is default = red/pink)
[192][192][192][64] RGBA for 'bypass' display
(192,192,192,64 is default = gray)
```

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Questions? Comments?

Email [steve@xferrecords.com](mailto:steve@xferrecords.com)

Thank you for your support

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