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G-FLUX



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for GFlux version v1.0.0

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1.1

Welcome

Thank you for your purchase of GFlux, we hope that your new filter will give you many years of faithful service.

GFlux is a complex beast, and as such we recommend that you read the whole manual to get the most from your new plugin.

GFlux is a powerful VST effect plug in which lets you shape and sculpt the tone and texture of any audio input. It could be conventionally described as a modulated multi filter and distortion plug in, but that would not do it justice. The scope and complexity of GFlux goes beyond conventional filter applications! GFlux comprises of four individual filters fully controllable via midi and modulated internally from any of the 4 modulators and 2 modulation mixers. One of the distinctive features of GFlux is the ability to change the routing between the filters by selecting any of 18 routing configurations. A distortion circuit is also included and can be switched between being in line before or after the filters.

Exponent are committed to maintaining GFlux, that is fixing bugs and providing updated functionality. If you find a bug in GFlux, or there is something that you really want it to do that it currently doesn't do, please visit our web forum (<http://www.expdigital.co.uk>) and let us know. The lead developers of the GFlux project are regularly on the board, and they are very receptive to questions and suggestions etc. We invite you to take the time to visit our user forum, where we'll be posting tips and information about how to get even more out of GFlux.

Thanks again for your purchase
All the best
Exponent

1.2 License

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Transferal of licences is possible (for example should you wish to sell the plug-in). However, please note that to cover administrative costs we charge a nominal fee of 10% of the cost of the plug-in to complete this service. For more information please see the support website.

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1.3 Acknowledgements

Thanks a lot to the Beta Testers whose input was invaluable:

James Hunter, Jens, Rory Dow (Rozzer), SinkMusic, Colin Fraser, Scott Gilfix, Frank Xenox Neumann, Michael McGrath, Dave-Kriminal, Dave Omahony, Stephan Müsch (rsmus7), Eric Wistrand, Will Bolam, Markus Hastreiter, Matthew Johnson, Fritz Hildebrandt, Michael Erwin, Henry Gibson, Steve Hamann

Special thanks to Jo and Cathy.

Thanks and shouts also to: Betabugs, The FXpansion team and The Acton Massive!

1.4 Technical Specification

- 64 Bit internal processing
- Midi control and host automation of all sound altering parameters
- VST 2.3 Compliant
- 11 Different distortion types
- 18 Different signal flows
- Four independant state variable filters
- Each filter is capable of simultaneous output of
 - Low pass
 - Band pass
 - High pass
 - Notch
 - Peak
- Filter frequency range: 30Hz - half sample rate
- Filter capable of self oscillation at high resonance levels
- 4 Modulator banks each offering
 - Drawable LFO - draw in your own LFO waveforms and create custom waky automation.
 - Loop envelope - Step sequencer
 - ADSR envelope - Standard ADSR triggerable with midi notes
 - Envelope follower - To track the peaks of an incoming signal
- 2 Modulation math blocks each offering 23 different arithmetic types, allowing you to apply modulation signals to other modulators
- Modulation matrix allows every filter parameter to be controlled by a modulator
- Configurable distortion position in signal flow
- 87 presets included with the download, plus more available to registered users in the near future!
- Drag and drop installation option
- Serial code copy protection

1.5 Installation PC

PC non-installer version

From the website you will have received a zip file, unpack this folder to any location you desire, making sure that you maintain the folder structure. Inside you will find three items:

1. A readme file (with the installation instructions as they are here)
2. A file named GFlux.dll. This is the actual VST plugin
3. A folder named GFlux. This contains the resources and other information that GFlux needs to run

Within this folder you will find several sub folders:

- Documentation
 - A copy of the GFlux licence agreement
 - The GFlux users manual
- Presets
 - Contains the various presets for the GFlux system and is the default location for saving to
- Resources.
 - This is the main GFlux resources folder. *Do not* change this folder!
- Web
 - This contains links to Exponent support and to the Exponent home page

To install GFlux simply copy both "GFlux.dll" and the "GFlux" folder to your VST plugins folder. You can copy GFlux to any location on your hard disk that you choose, however, the "GFlux" folder *MUST BE* at the same level as the "GFlux.dll" file. That is they must be next to each other! GFlux will issue warning messages if it cannot find this folder

Now go to [1.7 Registration](#)

PC installer version

Double click "GFlux Windows Setup.exe" then follow the instructions. The installer will guide you through the process. Once installed make sure you read the manual which is installed with the plugin. It is placed in a folder named GFlux/Documentation in the folder that you chose to install to.

Now go to [1.7 Registration](#)

1.6 Installation Mac

Mac non-installer version

From the website you will have received a zip file, unpack this folder to any location you desire, making sure that you maintain the folder structure. Normally this is accomplished by simply double clicking in finder. This will unpack and inside you will find a disk image. Double click on this file to mount the disk image. This should automatically open the GFlux disk image, but if it doesn't click on the mounted disk image on the desktop (it has an exp logo embossed on the removable disk icon)

When the window opens you will find that there are three items displayed:

1. A readme file (with the installation instructions as they are here)
2. A file named GFlux.vst. This is the actual VST plugin
3. A folder named GFlux. This contains the resources and other information that GFlux needs to run. Within this folder you will find several sub folders:
 - Documentation
 - This readme file
 - A copy of the GFlux licence agreement
 - The GFlux users manual
 - GFlux version history
 - Presets
Contains the various presets for the GFlux system and is the default location for saving to
 - Resources.
This is the main GFlux resources folder. **Do not** change this folder!
 - Web
This contains links to Exponent support and to the Exponent home page

To install GFlux simply copy both “GFlux.vst” and the “GFlux” folder to your VST plugins folder. You can copy GFlux to either the global VST plugins folder (/Library/Audio/Plug-ins/VST) or to your user VST plugins folder (~/.Library/Audio/Plug-Ins/VST), however, the “GFlux” folder **MUST BE** at the same level as the “GFlux.vst” file. That is they must be next to each other! GFlux will issue warning messages if it cannot find this folder

Now go to [1.7 Registration](#)

Mac installer version

From the website you will have received a zip file, unpack this folder to any location you desire, making sure that you maintain the folder structure. Normally this is accomplished by simply double clicking in finder. This will unpack and inside you will find a disk image. Double click on this file to mount the disk image. This should automatically open the GFlux disk image, but if it doesn't click on the mounted disk image on the desktop (it has an exp logo embossed on the removable disk icon). Inside you will find 2 files

1. A readme file (with the installation instructions as they are here)
2. A file named “GFlux Mac Setup.pkg”

Installation using the installer is very simple. To start the process just double click the “GFlux Mac Setup.pkg” file and then follow the instructions on screen. The installer will guide you through the process.

The installer always installs GFlux so that every user on your system has access to it. All the documentation is placed in /Library/Audio/Plug-Ins/VST/GFlux/Documentation. Please make sure you read the manual to get the most out of GFlux.

Now go to [1.7 Registration](#)

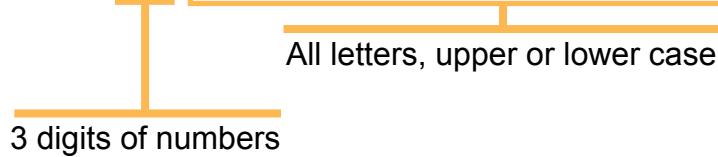
1.7 Registration

When you install it GFlux runs as a demo version. To enable the full features you must register the plug in. To do this you need the GFlux serial code supplied when you purchase GFlux at www.expdigital.co.uk. It should be supplied in an email after your payment has been authorised.

To register your copy of GFlux open GFlux and go to the config page by using the config button in the top left hand corner of GFlux. At the bottom of the config page there is a long box where you must enter the serial code. Once you have input the code and pressed enter your copy of GFlux will be registered. You will then be able to save settings in your host or as presets.

A valid serial code looks like this:

EXP - GFLUX - 123 - AbCD - ABcD - ABCd - ABCD - abCD - ABcD

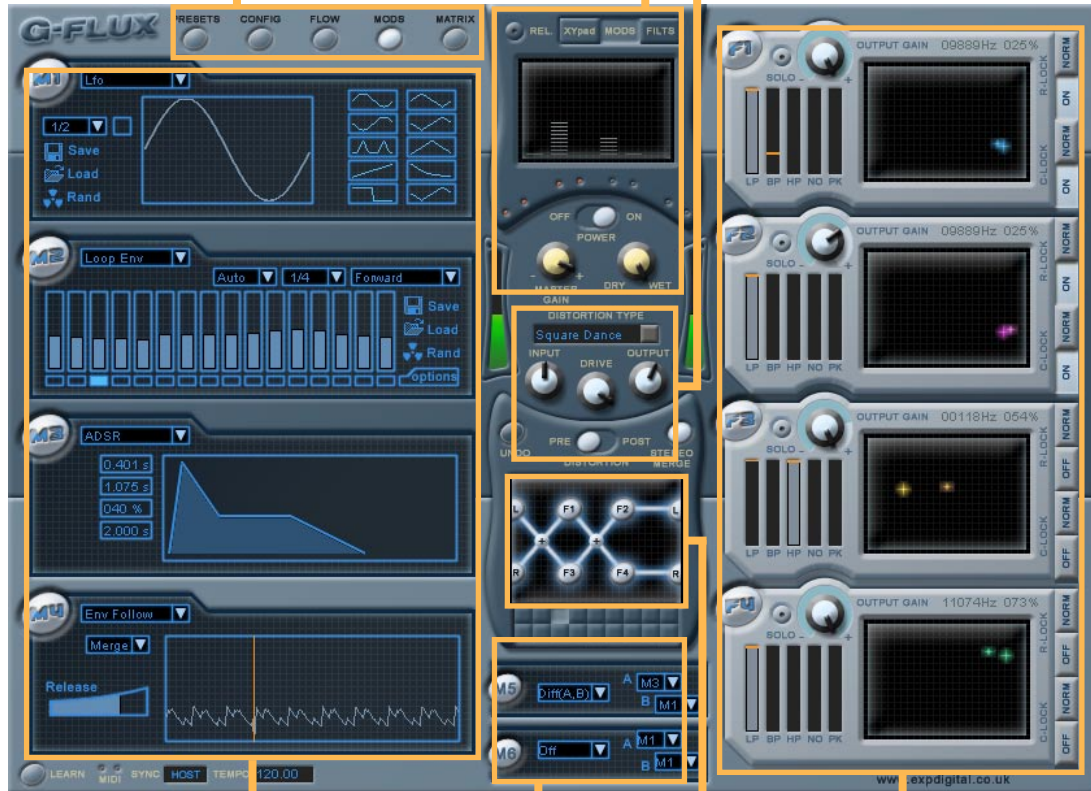


2.1 Main Screen Layout

Navigation - Use these buttons to move between Modulation, mod matrix, presets, flow selection and config.

Master section - With a master XY pad for controlling multiple filters, mix and master gain. See [2.4 Main Controls](#) and [2.5 Master Screen](#)

Distortion - You can switch between 11 types and switch between pre or post filter section. See [2.6 Distortion](#)



Modulators / Modulation Matrix / Presets / Config / Signal Flow - This area is shared by all these functions. To navigate between them use the buttons just above this area. GFlux has 4 modulation sources, switchable between 4 types. These can be routed to any of 48 destinations. For more details see [2.7 Modulators](#), [2.13 Modulation Matrix](#), [2.14 Presets](#), [2.15 Config](#).

M5 + M6 - These extra modulators perform maths functions on M1-M4. See [2.12 M5 + M6](#)

Flow - This screen displays the current signal flow routing. See [3.2 Signal flow options](#)

Filters - 4 identical 2 pole multi mode filters. Cut off frequency and resonance are controlled by using the xy pad. Each filter is running Low Pass, Band Pass, High Pass, Notch and Peak filters simultaneously. For more detail see [2.3 Filters](#)

2.2 Controller Types

GFlux uses a mixture of buttons, knobs, sliders and XY pads for controls.



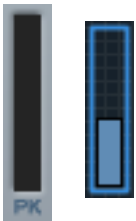
Buttons

Same colour as background when off, white when on.



Knobs

Clockwise increments increase parameter values. Always read the label. If you hold down Shift when you adjust any of the knobs in GFlux it allows you to finely adjust the control.



Sliders

You can adjust these by clicking on them and dragging the slider bar to the desired position.



Bi State Slider

These controls are set to the position indicated. To switch them to another state just click on the control



XY Pad

The 4 filters are controlled these. Cut off frequency is plotted horizontally and resonance is plotted vertically. See [2.3 Filters](#). There is also a master XY pad, see [2.5 Master Screen](#).



Drop Down Menus / Combo Boxes

When you click on these they display a menu which you can use to select the setting you want.



Besides using the controls on the screen you can also assign almost any control to midi, using the learn function (see [2.4 Main Controls](#)) Your host may also have other ways of controlling parameters within GFlux as well, please refer to you hosts documentation for further information.

2.3 Filters

On/Off

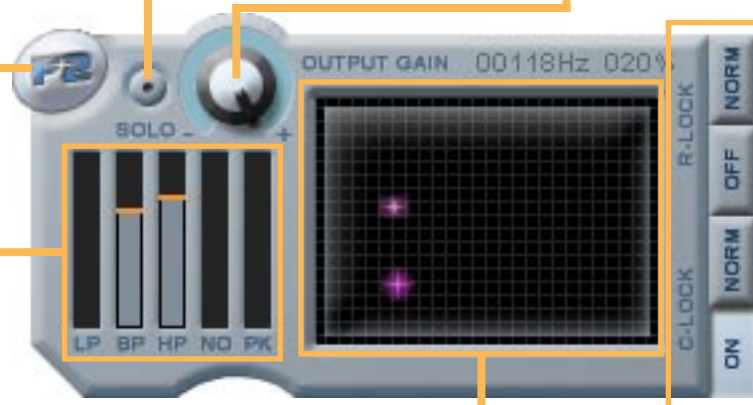
The On/Off button is labelled F1, F2, F3 or F4. It is on when it is lit up and the writing is blue, it is off when it is dimmed and the writing is greyed. When the filter is on the audio signal coming into the filter passes through the filter as configured and out to the next part of the signal flow. When the filter is off the audio signal passes through unfiltered to the next point of the signal flow (note that the gain level is still applied).

Solo

Only one solo button can be active at any time. This is because activating the solo button is like switching off all the other filters in the signal flow. It's useful for monitoring what each filter is doing individually. Note that the audio signal still passes through the distortion and mix controls.

Output Gain

This specifies the level of signal passed to the next point in the signal path (as per whichever signal flow is selected). The blue ring around this knob indicates the modulated position of the Output Gain. If you hold down Shift while adjusting the Output Gain it allows you to finely adjust the level.



LP, BP, HP, Notch and Peak Level Controls

Each of the filters has 5 different types of filter active at any time. The level of each type of filter can be raised or lowered and the output of the filter is a parallel mix of the 5 different types. The level of a filter type is indicated by the grey line. The modulated level is indicated by the orange line. If you hold down Shift while you adjust the level of a filter type it adjusts that filter type on all filters.

XY pad

The XY pad controls 2 different filter parameters, the Cut Off Frequency and the Resonance. The Cut Off Frequency is plotted horizontally and the Resonance is plotted vertically. Using the main XY cursor you have full control of the Cut-Off/Resonance domain. On the XY screen you will also see another smaller cursor which sometimes moves by itself, this is a display of the current position in the Cut Off/Frequency domain as modulated by the modulation matrix (i.e. the true value of the parameter) at the top of the XY screen you can see a display of the current frequency value. If you hold down Shift while adjusting the XY pad the cut off does not change, allowing you to only adjust the resonance. If you hold down Ctrl you can only adjust the cut off with resonance locked.

Locking buttons

The different locking buttons are for assigning the Cut Off Frequency and/or the Resonance to the master XY pad controller. If you set the masterscreen to XY pad mode using the buttons above it you will see a cursor like the ones on the individual filters. This cursor will control whatever is locked to the master screen, from any or all of the four filters. The Cut Off Lock button on each filter will lock that filter's Frequency to the master XY pad. If you also click the Invert Cut Off Lock button then the lock is reversed, so the XY pad will control the frequency of that filter in reverse. This means that when a lock is inverted high values far to the right on the master XY pad correspond to low values at the left of the screen on the filter it is controlling. The same applies for the Resonance. If you hold down Shift while locking or unlocking it changes that lock state on all four filters.

2.4 Main Controls

In the middle of the main screen, underneath the Masterpad there are 3 important master controls.



On / Off

The Power switch acts like a bypass, when this is set to on GFlux processes audio, when the power is off the audio passes straight through.

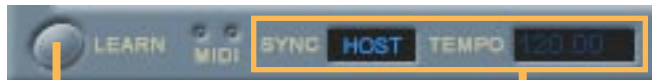
Master Gain

This controls the level of the output signal of GFlux.

Dry / Wet

The Mix controls a balance between The incoming audio signal (dry) and the processed signal (wet).

At the bottom left hand corner there are some more important controls.



Learn (midi)

The Learn button is one of GFlux's most powerful features because it lets you choose for any control which controller you want to assign to it. When you activate the Learn button GFlux enters Learn mode. When you click on any control the learn mode is active for that control. If you now move a midi controller routed to GFlux in your host, that controller number is bound to that control. You can assign as many controllers as you have and you can assign a controller to more than one control in GFlux (so you could bind the same controller to Cut Off on F1 and F2). To map Cut Off and Resonance for any filter make use of the extra buttons that appear in Learn mode above the XY pad.

Unlearn

To delete a midi control mapping simply engage Learn mode by making sure the Learn button is active and CTRL-click on the control.

Sync / Tempo

The sync toggles between Host and Intl (Internal). In Host mode GFlux will synchronise to the master tempo when used in hosts which send the correct time code information. In Internal mode you must specify a Tempo in the provided input box by clicking in it and typing..



Undo

The Undo button can be found on the left just below the distortion near the middle of the window. It will undo the last control change.

2.5 Master Screen

The Master Screen has a few functions and it's worth taking a moment to examine how to use it properly. It can be a master XY pad for controlling multiple filters and it can give useful information on modulators and individual filters outputs. The three different modes are selected by clicking on the 3 buttons above the XY pad.



Master XY pad

This can be useful for controlling complex filter sweeps on multiple filters. To read about how to lock filters to the master pad see [2.3 Filters](#).

Indicator lights for Filter Locks

Underneath the XY pad on the master screen you will see 8 small lights. These indicate what is currently locked to the master XY pad. The 4 pairs of lights correspond to each of the filter blocks, F1-F4. Each pair has a light for Cut Off Lock on the left and a light for Resonance lock on the right. If the light is unlit then that control is not locked to the screen, if it is red it is locked and if it is green it is locked in an inverted state.

Relative Lock

The relative lock button (marked REL in the top left hand corner) lets you chose what happens when you are controlling two filters with an offset between their cut off frequencies and one of them reaches the edge of the domain. By default, with this *inactive* the xy cursors on locked filters will snap to the position of the master cursor when you start handling it, and will now follow the master xy cursor wherever it goes. When this is *active* the cursors on individual filters will move from where they start, keeping the same position relative to each other. This has the added advantage that if you drag to the right or up the master pad carries on acting in it's range even if the filters reach their maximum value. If you do not adjust the filter cursors then the master pad will remember their relative position and restore it when you decrease the value of the master control again.

Modulation Scope

If you chose this view you can inspect the behaviour of modulators M1-M6. The level of the bar corresponds to the signal position. You can see here how fast each one is moving and it's useful to check that things are phased correctly when you've set up lots of complex automation. It's also useful for checking what M5 and M6 might be doing and to find out what all the other options on them actually do.



Filter Meters

This shows the output level (post gain) of the four filters.



2.6 Distortion

The distortion provided in GFlux give you access to 11 different types of distortion. Each distortion algorithm was designed to give a unique flavour of distortion, and includes wave shapers, analogue imitations, right through to out and out digital crunchers.. We are sure with the selection available, you wont have to try hard to find the distortion that you want...

The distortion has five controls:

Distortion Type This controls the type of distortion, simply click on the box and select the algorithm that you would like from the menu that appears. Remember to try some different settings of input gain and drive for each different distortion type. For a description of different Distortion Types, see below.

Input Gain. This controls the amount of input gain that is applied to the signal going in to the actual distortion process. It can be adjusted between 0% (all audio is cut) to 200% (the audio becomes twice as loud as it was). More about this control later

Drive. This controls the amount of drive that is applied to the signal - i.e. it controls how distorted the signal becomes. On most of the distortion types, this control represents a simple distortion drive, however, on the bit depth distortion type this controls the crush amount.

Output Gain. This controls the amount of gain applied to the signal coming out of the distortion. In many cases, the distortion algorithm can apply large amounts of gain to a signal, it is often beneficial to 'pull' the level back slightly, to avoid nasty digital distortion.

Pre / Post. This selects whether the input is processed through the distortion before or after the filter. Pre means the incoming signal is processed by the distortion before it passes through the filter structure. If you chose post it means the audio is filtered and then distorted just before the output.



2.7 Modulators

There are 4 different types of modulators available and 2 extra mathematical operator modulators. When GFlux is showing the modulators screen you can see the four modulator slots. To display the modulator screen from any other screen use the navigation buttons at the top left of GFlux. You can select any one of the four modulators in any of the four modulators slots. They are all completely independent slots and can be changed at any time. All of the adjustments you make to any of the modulators will be saved along with everything else when you save a preset.

Use the drop down menu next to the modulator number (M1, M2 etc...) to chose which modulator type is currently active on that slot.



2.8 LFO (Low Frequency Oscillator)

The LFO modulator repeats a single waveform at the specified tempo or frequency. You have enormous control over the shape of the shape of the waveform. You can either load a preset waveform or edit your own based on the currently selected one.

Speed / Frequency
Select the number of bars one wavelength lasts from the drop down. If you tick the box you can directly enter a frequency into the text box by double clicking inside it.

Load / Save / Randomise
Use this to load custom waveforms or any others. You can save the waveform you've edited or completely randomise it.

Waveform Display / Edit
This shows the waveform currently running. If you double click on the screen it will open the LFO waveform editor (see next page).

Waveform Short cuts
These buttons will load preset waveform shapes. You can configure which waveforms appear here, see [2.15 Config.](#)

2.8.5 LFO Waveform Editor

If you double click on the waveform display the waveform editor window opens. This lets you draw the waveform using a variety of drawing and maths tools. It loads the current waveform for editing, so if you want to start with a sawtooth wave then select or load that first before opening the editor. You can move the waveform window around by clicking on the left hand side of it and dragging. When you have finished editing the waveform you have to apply the edit using the tick button, when you do this it immediately becomes the current waveform for that modulator, until then any changes you make do not affect the real time signal and can be undone at any time. You can close the waveform editor at any time by clicking anywhere outside it, but you can chose to set it to remain open using the pin icon in the top right. You can only have one LFO waveform editor open at any time.

Editing / Drawing Tools
See below for a full description of each of these.

Remain Open
By default this window will close when you click anywhere outside it, if you activate this control the window will stay open.

Lock
When active this locks the line tool to points at the edge and middle of the screen, when you approach them.

Modulator
This number is the modulator that the waveform is active on. So this waveform is active on an LFO on M1.

Apply / Commit
This applies the edits you've made and makes the red waveform the current waveform for this modulator.

Reject
This deletes all editing you've done and resets the edit window back to the currently active waveform.

Edit Screen

The current waveform which you started with (and which is active as the waveform until the edit is applied) is shown in blue. The edited version with the changes you make and edit is shown in red. When you apply the edit this becomes the active waveform, until then you can carry on editing it. If you want to save a waveform you have edited then you have to apply the changes and save it using the save control on the LFO.



Freehand Drawing tool

Works best if you drag to the right with a steady hand.



Line Drawing tool

Click in one place to start, then hold it down and drag to the end point. If the lock control is active, as you approach the corners or centre of the edit window, red boxes will appear. By moving the cursor in to these areas the line tool will automatically jump to that point.



Eraser tool

Lets you drag a box across any section of waveform and resets that section a the mid point of the waveform.

**Smoother / Blurrer**

This lets you drag an area in which you want to smooth the edges. It then rounds off the corners.

**Translator**

This lets you pick up and drag the entire waveform up and down. This can be useful for creating 'hard edges'

**Stretch tool**

Click this once and the first half of the waveform will stretched to cover the whole range.

**Squash tool**

Click this once to repeat the entire waveform, resulting in the waveform running twice during the range of the waveform

**Normalise**

This vertically stretches the waveform so it runs between the maximum amplitudes.

**Flip Vertical**

This inverts the waveform, turning it upside down.

**Flip Horizontal**

This swaps left and right over.

**Mirror**

This creates a reflection of the first half of the waveform in the centre line.

**Mirror**

This creates an inverted reflection of the first half of the waveform in the centre line. This is very useful for creating symmetrical waveforms.

2.9 Loop Envelope

This repeats a sequence of values at a specified speed with different options for looping. You can edit the steps individually and by using the useful drawing options which easily create ramps and scrapes.

Synchronisation Control

T + H - Trigger and Hold plays the loop continuously while a note is held down.

Auto - Plays the loop continuously, synchronised to either host tempo or the internal GFlux tempo, [see 2.4 Main Controls](#).

P. Rst - Phase Reset runs the loop continuously regardless of whether the host starts or stops. Midi note on events can be used to retrigger the loop envelope, [see 2.15 Config Panel](#)

Steps

Each of the 16 levels controls the level of the modulation at that step. Click in a sliders area to adjust its level

Step Indicators

Each step has a corresponding light underneath. When the loop is running a blue light moves along the lights indicating the position of the loop. A different shade of blue indicates that the step is selected, selecting cells can be done either by clicking on it or by using the selection sub menu on the options menu. You can then do a variety of things to the selected steps using the operations sub menu, as described to the right.

Speed / Timing

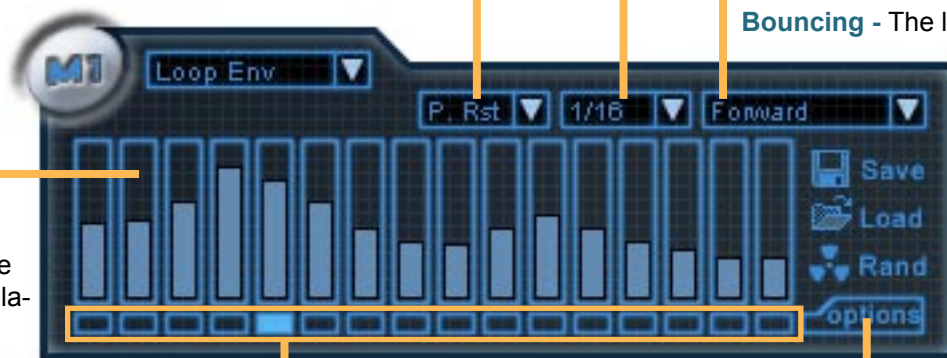
This controls the interval each step lasts for, so set to 1/16 like this the loop lasts for 1 bar. Also available are triplets and dotted intervals.

Direction

Forward - The loop starts on the left and runs to the right, then repeats.

Backward - The loop runs from right to left and repeats.

Bouncing - The loop runs from left to right then back to the left and repeats.



Options Menu

This comprises of 3 sub menus which form a set of tools that help you quickly draw different types of sequences.

Process sub menu

Mirror - Makes the second half of the sequence a repeat of the first half of the sequence in reverse order.

Mirror (inverted) - Makes the second half of the sequence equal to 1- each step in the first half (where 1 is the range of each step), think of it like turning the first half upside down.

Smooth - Adjusts the sequence so each step is slightly closer to the value of the step before it.

Operation sub menu

Invert - Turns the selected steps upside down (like 1 - current value).

Ramp - Creates a straight line between the first and last selected values, so if the first is a very low value and the last is very high the result would be a steady increment of the values between them.

Lock - Locks the selected steps together so when one is moved, they all move to the same value.

Selection sub menu

These menu options allow you to select multiple steps in different combinations.

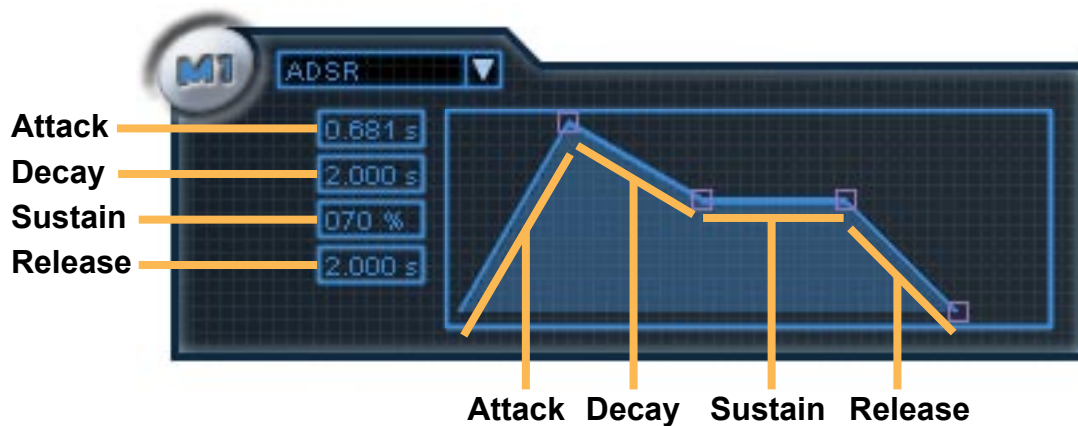
2.10

ADSR Envelope Generator

An ADSR Envelope Generator creates a control signal that can be applied to destinations in the modulation matrix. It is composed of four distinct stages, namely Attack, Decay, Sustain and Release, which can each be adjusted.

You edit the envelope by using the mouse to drag the nodes on the screen (they appear as red squares when you move the mouse over the envelope display screen). The change in value will be reflected in the display boxes to the left of the envelope diagram.

You can trigger the ADSR envelope from midi using the midi note specified in the config page. When the note is received the envelope begins playing, progressing through the Attack and Decay stages. As long as the note is held the envelope will output the sustain level. When the note is released the envelope progresses to the release stage and ends. Note that you will need to retrigger the note every time you want to trigger the envelope.



2.11

Envelope Follower

This follows the level of the incoming audio signal. You can select to create an envelope from either the left or right channels or stereo merged channels (default).

The release controls how quickly the envelope recovers after peak. When the envelope follower detects a sudden increase in the signal it jumps to that peak, with a long release the peak decays very slowly after the peak, conversely with a short release the envelope drops down to the level of the incoming signal very quickly. For example you might like to use a long release when processing a rhythm track, this would mean that the Envelope Follower would create a modulator signal which very accurately follow the rhythm of the part, which would be useful for modulating filter parameters in time with the rhythm.



2.12

M5 + M6 (Mathematical Modulation Operators)

M5 + M6 are located at the bottom of GFlux in the middle. They are both independent of each other and are identical. Each has three controls. The mathematical operator that is selected is performed on source A and/or B, which can be any of the other 4 modulators.

In GFlux all the modulators generate a signal which moves between 0 and 1. Some of the operators only use one of the sources, in this case the other source is ignored completely.

Note that you can view the output of the modulator by using the MODS option on the main XY pad at the top of the GFlux screen.

Operator

This drop down box is where you choose which mathematical function M5 or M6 will perform on the chosen Modulators (M1 - M4).



Sources

You can select M1-M4

Operator list

Off	A*B	Pow(B,A)	Sin(B)	Tanh(B)	A*A
CL(A+B)	Sqrt(A)	1-A	Cos(A)	Min(A,B)	B*B
A+B	Sqrt(B)	1-B	Cos(B)	Max(A,B)	A*A*A
A-B	Pow(A,B)	Sin(A)	Tanh(A)	Diff(A,B)	B*B*B

2.13 Modulation Matrix

The modulation matrix can be accessed by clicking on the matrix button at the top left of the Screen.

The screenshot shows the Modulation Matrix interface with two columns for F1 and F2 modulation. Each column has a header with 'Src.', '- Depth +', and 'Destin.'. Below the headers are rows of controls for various filter parameters. Annotations with orange lines point to specific controls:

- Depth control:** Points to the depth slider for F1 Cutoff.
- Modulation source:** Points to the source dropdown menu for F1 LP lvl.
- Destination:** Points to the destination dropdown menu for F1 HP lvl.
- e.g. The Resonance of filter 2 is being modulated by M5:** Points to the source dropdown menu for F2 Res.
- e.g. The High Pass level of filter 2 is being modulated negatively from M2 but only a small amount:** Points to the depth slider for F2 HP lvl.

The four sections correspond to each of the 4 filters (F1 - F4) and each line in the list represents a different filter control that is the destination for that modulation. By clicking on the drop down box you can choose a source for the control. You can choose between any of the 6 modulators. You must also set a depth amount for the modulation. The line in the middle represents a depth of zero, which means that no modulation is applied. Setting the depth to the right of the line applies the modulation positively (if the modulator moves above the centre line the modulation will increase the value of the control). If you set the depth to the left of the line it is applied negatively (effectively inverting the modulation waveform). The further away from the line you drag the control the greater the depth of the modulation, causing the value of the control to move further away from its initial, un-modulated value. The maximum range of the modulator is applied evenly either side of the initial value.

The diagram shows two buttons: 'Copy from' and 'Paste to'. The 'Copy from' button has a dropdown menu with a blue arrow icon. The 'Paste to' button has a blue arrow icon pointing to the right. A label 'Global' is positioned to the right of the buttons, with a line pointing to the 'Copy from' button. Below the 'Global' label is the text: 'Shortcuts for selecting different modulation parameters'.

You can copy the modulation settings for one of the filters to another using the copy to and paste to buttons in the top left of the modulation matrix screen. When you click the copy from button a drop down appears that allows you to select which filter you want to copy settings from. On the filter you want to paste the settings to you need to select the controls you want to paste values to, using the bullet boxes in the left column of the matrix table. Alternatively you can select none of the controls in which case all the settings from the copied filter are pasted into that filter. Finally you must click on the paste to button and select which filter you want to paste the settings you copied to.

The global control button lets you use short cuts for selecting different combinations of filter controls across multiple filters.

At the bottom of the matrix screen there is the last value box. You can double click in the box and type the new value for whatever matrix depth was just selected.



2.14 Presets

Presets are saved settings for every parameter in GFlux. They include customised LFO waveforms, modulation routing, filter position, locking configuration and everything else.

To save a preset at any time go to the presets page and click the save icon (see illustration below). You will be prompted for a save location, you can create a new folder, which will subsequently appear as a preset bank.

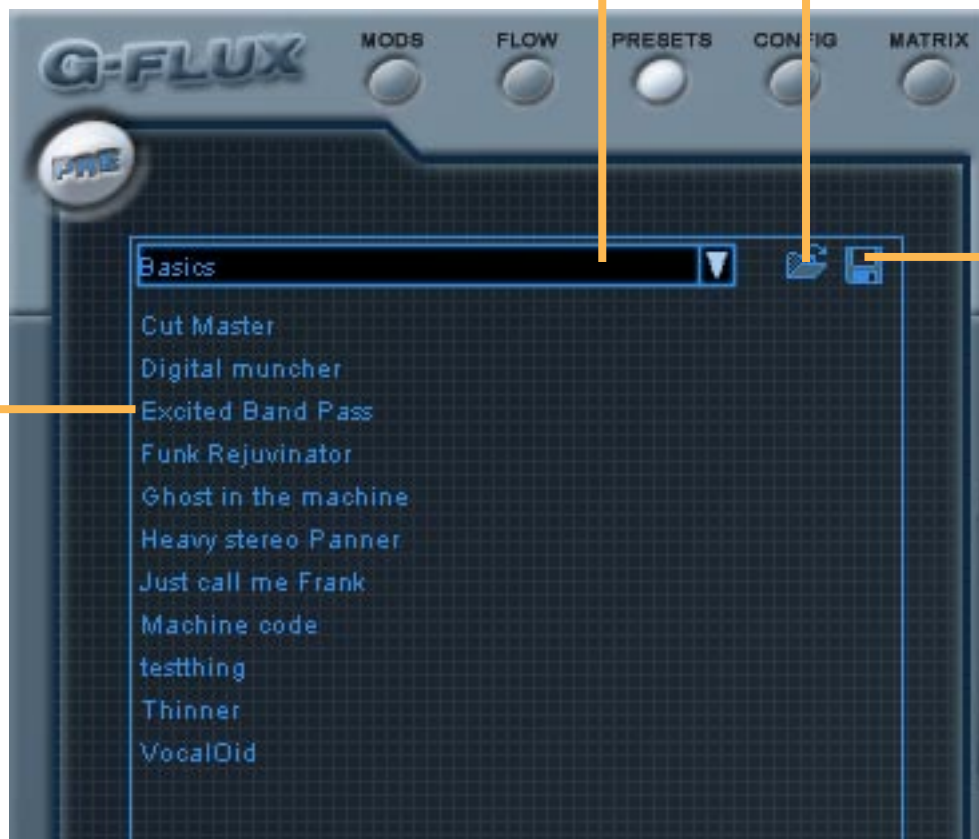
To load a preset click on the presets navigation button. The left of the screen will change to the preset browser. You can double click on preset names to load them and browse preset banks using the drop down menu.

Folder / Bank Drop Down

Click on this to browse to a different bank of presets.

Load

Another way to load a preset, by navigating directly to the preset file. (Files with .gflux extension)



Presets

Double click on any of these to load them (note your current settings will be lost unless you have saved them)

Save

Click here to save all your current settings

We have included several factory presets. These are organised into preset banks. Some of these banks are basic filter configurations (8 pole filters, 4 pole stereo filters, already setup and ready to go, just needing to have the frequency adjusted on the master XY pad). Some of these are complicated patches that really show you what GFlux is capable of, these include some crazy effects, the result of which goes way beyond the sum of GFlux's parts, although some of these presets work best with specific types of sounds. If you're ever stuck for inspiration, we advise you to grab some sounds you have lying around, feed them through GFlux and try out some of the presets. You can learn a lot about how to use GFlux by editing the factory presets. Scroll to the next page to see a full description of each factory preset.

Preset Bank	- Description
Standard	- Standard filters (8 pole, 4 pole etc)
Simple	- Basic filter types including augmented Standard filters
Rhythmic	- Tempo based auto filters
Spatial	- Stereo effects
Evolving	- Slower tempo based auto filters
Sub Mentalist	- Complex modulation patterns
Mentalist	- For the mentalists out there!

Standard Banks

Standard 2 Pole Stereo

Standard 4 Pole Stereo

Standard 8 Pole Stereo

These Presets don't require much explanation. They can all be controlled from the master XY pad.

Simple (presets cont'd)

Augmented Stereo 4 Pole Band Pass

Stepped band pass, sweep using the master XY pad.

Augmented Stereo 4 Pole High Pass

Stepped high pass, sweep using the master XY pad.

Augmented Stereo 4 Pole Low Pass

Stepped Low pass, sweep using the master XY pad.

Augmented 8 Pole Band Pass

Extreme Band Pass preset with peak filters and slight modulation to add some subtle movement. Use the master XY pad.

Augmented 8 Pole High Pass

Extreme High Pass preset, augmented with other filter types. Keep the resonance low. Use the master XY pad.

Augmented 8 Pole Low Pass

Extreme Low Pass preset, augmented with other filter types. Keep the resonance low. Use the master XY pad.

Augmented Wide Mid

Like wide mid, but with two extra filters after the serial HP and LP. Use the master XY pad to put the band pass filters in the desired range. Note that the second pair of parallel filters also have a LP and HP to preserve the wide band filter.

Bell Decimator

High range Transistor grime - adjust master XY pad to find the right frequency. also adjust the depth of the distortion to taste, or try automating it! Locked to the master XY pad.

Effect Comp

2 parallel filters in series, locked to the master XY pad.

Excited Band Pass

This is a series of two parallel Band Pass filters. Use the master XY pad to choose the desired frequency.

Forced Bottom

Powerful bass enhancer.

Gentle Low Pass Sweeper

A series of stepped low pass filters set up to be swept across the frequency range using the master XY pad.

Green Chest

Boxy effect that brings some punch out, use at low resonance. This works by combining a high resonance filter with a low resonance filter after it.

Green Foot

More muffled, this really brings out high range dynamics, use at low resonance.

Green Hand

Another very minimal sound, this time with a more relaxed feel.

Paratroopers

Adds more level and some subtle distortion with a powerful kick that blends nicely to add more power to a bass sound or drums.

Pure 8bit Old Skool

Heavy distortion to mash up the speaker at the frequency you put the master XY pad at.

Super BP

A subtle Band Pass effect combined with different filter types to let a lot of the original sound through, meaning you can use the master XY pad to emphasise a certain frequency while still preserving much of the original spectrum.

Thinner

Thins the sound out slightly to create a more restrained version of the input.

Try It On a Kick Drum

A different heavy distortion effect.

Wide Mid

A low pass and high pass in series. Adjust the cutoff frequencies of filter 1 and 2 to chop the desired amount of top and bottom off. Suggested mainly for use as a shortcut to creating more complex patches operating on the mid range.

Rhythmic (presets cont'd)

Auto Wah

The filters in this effect are modulated by an envelope follower. The result is that the filtering effect changes depending on the level of the sound being processed.

Bass Spreader

A solid crunchy distortion with a fast moving band pass filter in the bass to mid range. To make it even crunchier try switching off F3 and F4.

Compressor Accenter

2 bar modulation effect. Works best on bass sounds, but can easily be tweaked to work on any sound.

Every Other Screamer Fast

A staged serial low pass with automation applied so that resonance peaks every 1/4 beat and every other 1/4 beat is at an increased frequency. Sweep the filters around using the master XY pad.

Four Stage Screammers

Like every other screamer except with an extra twist to the automation, so there are four stages of filtering running through the sequence. Adjust position with the master XY.

Four Stage Solid Low Pass

A 6 pole low pass filter automated to give a repeated four stage filter tweak across a single bar length.

Frequency Enhancer

This effect increases the presence of a frequency range. Move the master XY pad to your chosen frequency.

Frequent Flexer

Bit crusher distortion effect.

Funk Rejuvenator

Envelope following sweeps that hum along to the tune. Adjust the frequency using the master XY pad, this effect really does work at any frequency!

Multi Phase Opposed Bands

A subtle warm sounding distortion which sweeps rhythmically. The master XY pad is a particularly useful way to adjust this effect because it controls half the filters inversely.

Stereo Multi Phase Dry

A nice filter effect with some subtle panning. Has a nice restrained bass response and a clear sound. The master XY pad adjusts all four filters.

Spatial (presets cont'd)

Break Out the NES

Clever distortion effect with a bouncing pan on the output. Adjust the distortion drive to taste and use the master XY pad to adjust the final two filters in the chain.

Heavy Stereo Panner

Scratchy distortion effect with Stereo movement. Adjusting the master XY pad changes the frequency of the glitchy overtone.

Life Without Stereo Has No Meaning

2 bar panning effect with heavy bass. This can do lots of different things depending where you put the master XY pad.

Manouva

Glitchy distortion with heavy modulation and panning. Adjust the distortion drive and the master XY pad to radically change the frequency harmonics of the output.

Mashed Pan Brain

Distorted panning effect. Adjust the period of the waveform modulator on M3 if you want to change the period of the pan. Note that the period is twice the real pan time because the modulator has a double length waveform.

Spatial Circles

Heavy stereo panning on multiple filters

Stereo Aneurysm

A frequency based auto-panner in which the bass end and top end are on opposite side and continuously swap. To adjust the crossover frequency adjust the master XY pad.

Stereo Embolism

Another frequency based auto-panner which can be adjusted using the master XY pad.

Stereo Multi Phase Crisp

A subtle panning effect with a nice crisp sound. The master XY pad controls the filters. If the panning effect isn't extreme enough for you we suggest increasing the modulation depths for F1 and F4.

Evolving (presets cont'd)

Cut Master

A smooth pure tone evolves and repeats.

Digital Muncher

A slowly sweeping, but energetic modulation with a restrained but strong tone.

Hard Crispy Groover

Distortion effect with a nice crispy high range. with a really long modulation sweep. With a subtle 8 bar sweep.

Flat and Flabby

A very slowly evolving effect. because of the different long range modulations this effect would not repeat itself for several minutes.

Machine code

A distorted granular effect which sweeps across the full audio range.

Panning Range Twanger

Spatial panning effect with a very long period, designed to give movement to pads. If you find that the sound becomes weak you may need to adjust the master XY pad to cut off less top end.

Sub Mentalist (presets cont'd)

Crazy Circles

Elliptical modulation sweeps. Subtly adjust the master XY pad to taste, but notice that the effect can lose some of it's charm when the filter controls are adjusted too high or too low.

Cross Job Transformer

Turns any girl into a boy, use on any sound and use the master XYpad manically for instant glitch.

Deep Fried Crispy Bits

This has it all, a feast of modulation and distortion, which evolves slowly over time.

Ghost In The Machine

Minimalist filtering that cuts the sound and leaves little behind. Adjust the wet/dry mix to taste.

House of the Flexed Head

Muted filter effect. Adjust the cut off on F1 to control how much the bass end is limited. Adjust the cut off of F2 to control how much the high end is limited.

Just Call Me Frank

Bold and boxy sound which resculpts itself according to the input. Sounds with stereo movement create a more varied and complex sound. Adjust the main frequency using the master XY pad.

Metaliser

Screaming distortion effect. We highly recommend automating the master XY pad from midi.

Mixed Up Auto

6 pole high pass filter with a jerky automation. Adjust using the master XY pad.

Shaper For Synths

Filter effect designed to add some stereo movement to a synth or pad sound. Use the master XY cursor to adjust the left side of teh stereo spread.

Underwater

This one filters off the bottom and top ends, giving a muffled sound. Try adjusting or sweeping the wet/dry mix control.

Mentalist (presets cont'd)

Audio Range Stereo Panned

This effect introduces some unpleasant noises in the high frequency range. You love it. Observe the use of audio range oscillator on m3 to provide a very fast modulation in Stereo.

Chris Underwater World

Take a journey into the underwater kingdom, which is a strange place indeed. This is a slowly evolving multi faceted modulation effect with a strong rhythmic dynamic. You really should try the master XY pad on this one.

Crunch Master Rhythmtron

Pure glitch.

Double Penetration

More glitch. This effect really does depend on the input sound.

Drum Decoder

A staggered and juddery sounding effect, which changes gradually. Using the master XY pad to increase the resonance of the filters yields some bizarre sounds.

Hard Mash

Plenty of modulation give this a vibrant and edgy feel.

Stereo Circles

Rapid circular modulation is applied to the last two filters in the audio chain, with the modulation 180 degrees apart. This has the effect of moving the emphasis of the bass end between the left and right speaker. TO adjusts the speed of the modulation change the modulation periods on all 4 modulators. Adjust the frequency you wish to emphasise by using the master XY pad.

Stereo Squares Mashed

Glitch effect using fast modulations running at several different speeds. Use the master XY pad to adjust the frequency.

Synth and Kick

Sweeping and wah effect with panning. Use on a pure tone for the best results.

Vocaloid

Electro sweeps with a round and soft tone. use the master XY to adjust the frequency of the output tone.

2.15 Config

We advise you to read this section before changing any of the settings in the Config panel.

Midi Config

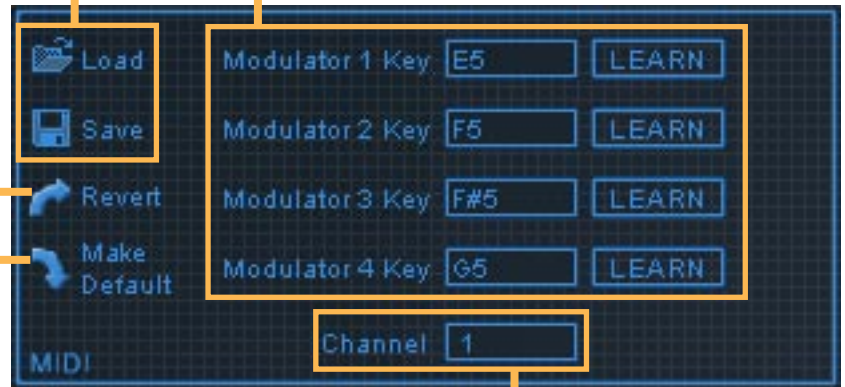
The top section relates to midi settings for GFlux.

Load and save - Manages different midi set-ups, including the midi settings here and any controllers mapped using the learn function.

Revert - Reverts to the default midi setup.

Make Default - Saves the current midi setup as the default, which will load every time you initialise GFlux from now on.

Midi Note Triggers - This sets the midi notes which trigger the modulators. To change any of the notes click the learn button next to the note box and press a note on a midi keyboard (or trigger a note in your sequencer).



Midi Config - You can also specify which midi channel GFlux responds to. If you double click on the midi channel display box you can enter a number between 1 and 16.

Master Settings

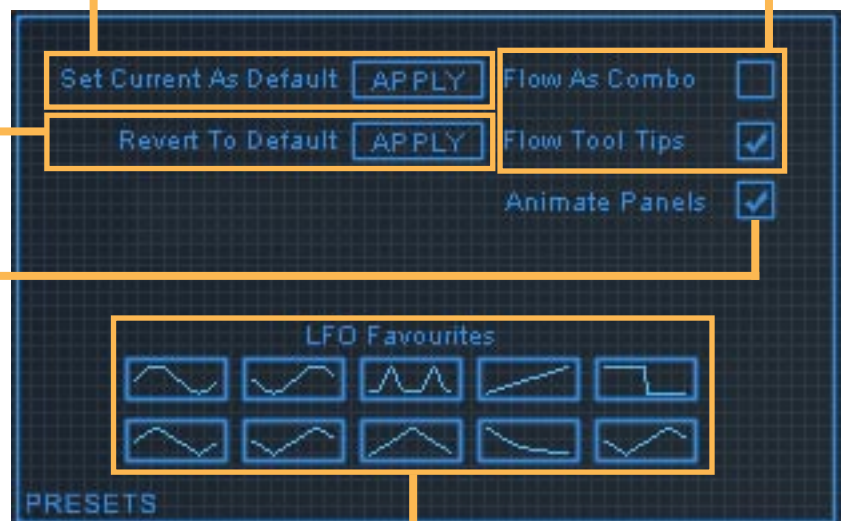
The middle section of the config page contains a variety of settings.

Set Current as Default Apply - Saves the current GFlux setup as a preset which will be loaded from now on whenever GFlux is initialised.

Revert To Factory Default Apply - Resets the start up preset to the basic default setup

Animate Panels - This should only be unticked if you have a slower system. It disables the meters and modulation animations.

Flow Selection Config - Flow as combo changes the way signal flows are selected [see 3.1 Understanding Signal Flows](#). You can disable the flow tool tips on the flow buttons by unticking 'Flow Tool Tips', these are the small image of the signal flow which appear as you hover over the flow buttons



LFO Favourites - These are the waveform shortcuts shown in the LFO modulator. You can change which ones appear there by clicking on one of the waveforms and selecting one from the drop down menu. Use the Re scan Presets option if you have copied new LFO waveforms into your GFlux resources folder.

3.1 Understanding Signal Flows

GFlux supports 18 different signal flows through its components. A signal flow represents the order in which the audio is processed through the different device elements in GFlux. There are 3 different ways you can change the current signal flow. As shown below there are two settings you can choose between (in the [config page](#)), they change the control under the signal flow display screen.



By default you see a combo box, if you click this you will see a drop down which lists the different signal flow options with an illustration.



If you disable 'flow as combo' in the [config page](#) you see 18 small buttons, each of which selects a different signal flow. Note that you will see a small illustration of the signal flow when you hover across each button.

The other way of selecting signal flow is by using the signal flow menu. You can access this by clicking on the button marked 'flow' in the top left hand corner of GFlux. A large diagram of each signal flow is displayed.

To the top-right of the screen there is a Stereo Merge button. If active this mixes the L and R outputs of the Flow diagram which is active and outputs the resulting signal to both channels. Note that on some Flow diagrams the L and R outputs both receive the same signal already, in those cases the Stereo Merge will have no real effect on the audio signal.

In the middle above the Flow display screen is the Distortion Pre/Post slider. This changes the position of the distortion unit to be either before or after the filters section. This can have a very dramatic effect on the overall output of GFlux and some distortion types are best suited to being used pre-filters and some are best suited to being used post-filters.

The signal flows presented here cover almost all the possibilities that would be possible with up to 4 individual units. Remember that you can deactivate any of the filters, giving you extra options from each signal flow. For example, if you only want 3 filters in a parallel, choose one of the presets where there are at least 3 filters in parallel and deactivate the other filter. There is one drawback to the system we have chosen, in that it is not possible to choose which of the 4 filters is in a certain position (e.g. first or last) in the signal chain. This may mean that if you were to swap from an algorithm with 3 parallel filter followed by another filter to one in which the parallel block is preceded by a single filter then you would have to reconfigure the settings in the four filters to represent the new position.

3.2 Signal Flow Options

Each filter block is marked F1-F4, when you chose a signal flow you are choosing in which order the different filter blocks process the input signal. These 18 different arrangements represent almost all the possible combinations of 4 filters that would be possible. Note that you can't specify which filter block comes first or last, it will always be the one shown in that place in the signal flow.

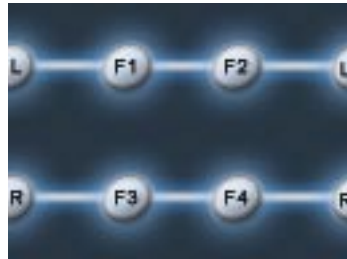
You can see by looking at the signal flow that the left and right inputs are routed in different ways through the four filter blocks. Each filter block only processes in mono, so on some flows the signal is summed to mono, this is represented on the diagrams either as left and right routed to Fn or the left and right routed to a '+' mixer and then onto several different filter modules.

The output of the filter is true stereo and in some arrangements the left and right output channels get fed from separate independent filter blocks. (e.g. 2: Stereo parallel has the left output from F2 and the right output from F4, with two independent audio chains giving true stereo from input to output. On some arrangements the output is mirrored on left and right (e.g. 1: Full series both L and R are fed from F4). There is also a stereo merge button to the top right of the signal flow display screen. If this is active then the left and right outputs are both mono sums of the L and R outputs marked on the arrangement diagram, this can have a dramatic and useful effect in some applications. Lets consider the signal flows you can chose from and then discuss how or why you might decide which one to use.



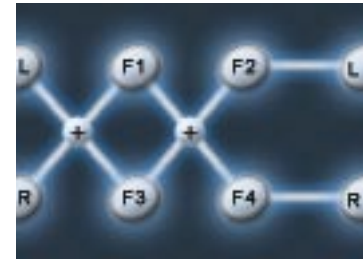
1. Full Series

Useful either as a series of equalising filters or for building an 8 pole mono filter.



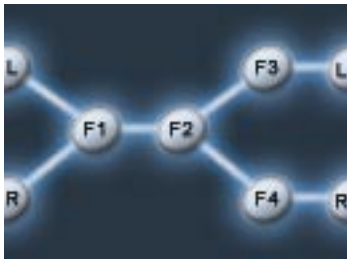
2. Stereo Parallel

For producing Stereo 4 pole filters or for separating two frequency ranges if merged post.



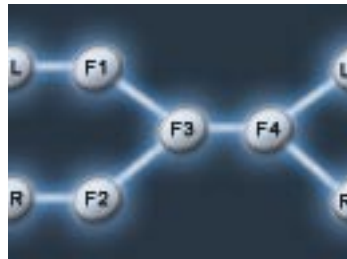
3. Parallel in Series Stereo

Two parallel blocks in series. This is an ideal candidate for excessive automation.



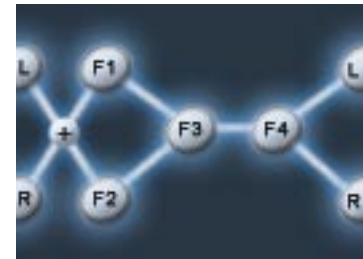
4. Parallel follows Series

Could build a 4 pole filter which is then split into two stereo frequency ranges (perhaps with opposite automation)



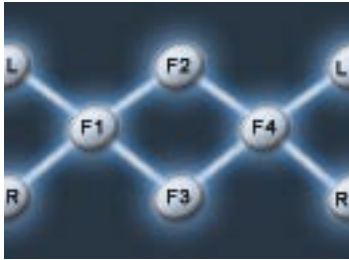
5. Series follows Parallel Stereo

Here the left are right are separately processed, then fed through 2 more filters in series

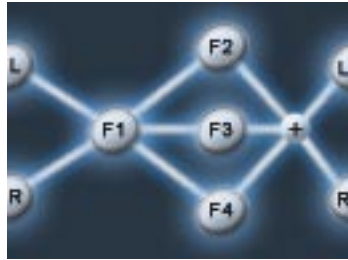


6. Series follows Parallel

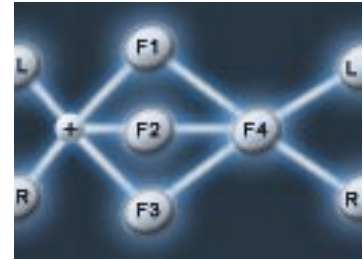
As 5 but mono input



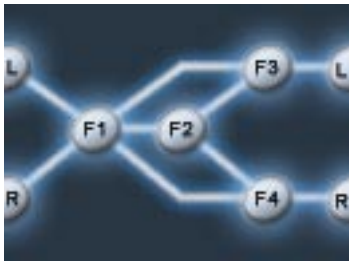
7. Mono Diamond Filter
 Suitable for many applications especially for when you want to create two opposite automations on parallel filters.



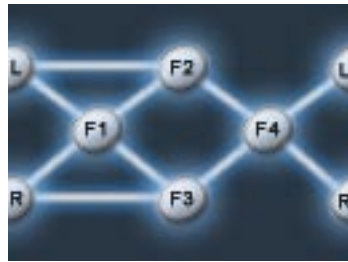
8. Post Triple
 A single filter followed by Three filters in parallel.



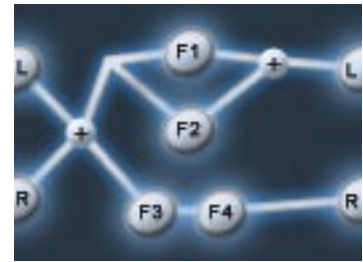
9. Pre Triple
 Three parallel filters followed by a single filter.



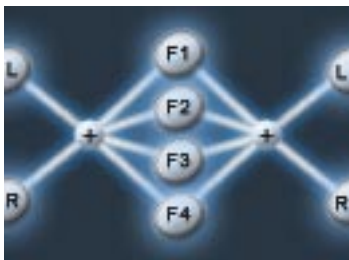
10. Stereo Multi Bypass
 Perfect for introducing some automated panned filtering or panned cross sweep.



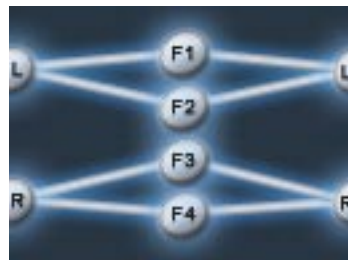
11. Diamond Stereo Input
 Perfect for introducing some automated panned filtering or panned cross sweep.



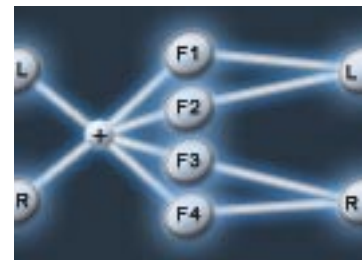
12. Parallel and Series in Stereo Parallel.
 This can always be made into a mono output by using the stereo merge option.



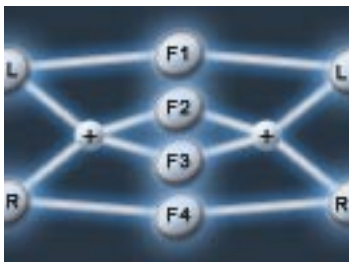
13. 4 Para
 Four independent 2 pole mono filters connected in parallel. Useful for multi band filtering.



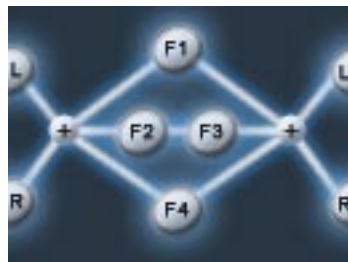
14. Full Stereo Parallel
 Two pairs of filters in parallel form a truly independent stereo multi filter.



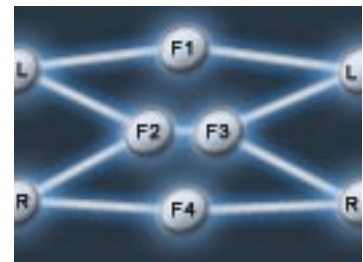
15. Stereo Out Parallel
 As 14 but with a merged mono input. Note that engaging stereo merge would replicate 13.



16. Partial Stereo Parallel
 Dedicated filters for the left and right channel, but mixed with a merged input processed through a parallel pair.



17. Super Parallel
 Two filters mixed in parallel with a pair connected in series.



18. Partial Stereo + Series
 Dedicated filters for the left and right channel, but mixed with a merged input processed through 2 filters in series.

4.0 Support

<http://support.expdigital.co.uk>

At our website you can download any updates. We also hope to make a preset library available in due course.

We are committed to providing comprehensive support for GFlux for all registered users.

Your first line of support will be this manual, which describes much of the functionality of GFlux.

In the event of not being able to find information relating to your problem in this manual please visit our web forum where we will be able to provide prompt support to any question, however please search the forum first to see if anybody else has already asked the question.

Lastly, registered users can always email us at support@expdigital.co.uk, please note that we will try to answer your email as quickly as quickly as we can but that it may not always be possible to reply straight away.

When contacting us for support please include the following information:

- GFlux version number (you can find this at the bottom of the config page)
- OS version
- Computer specs (cpu, ram)
- Host name
- Host version