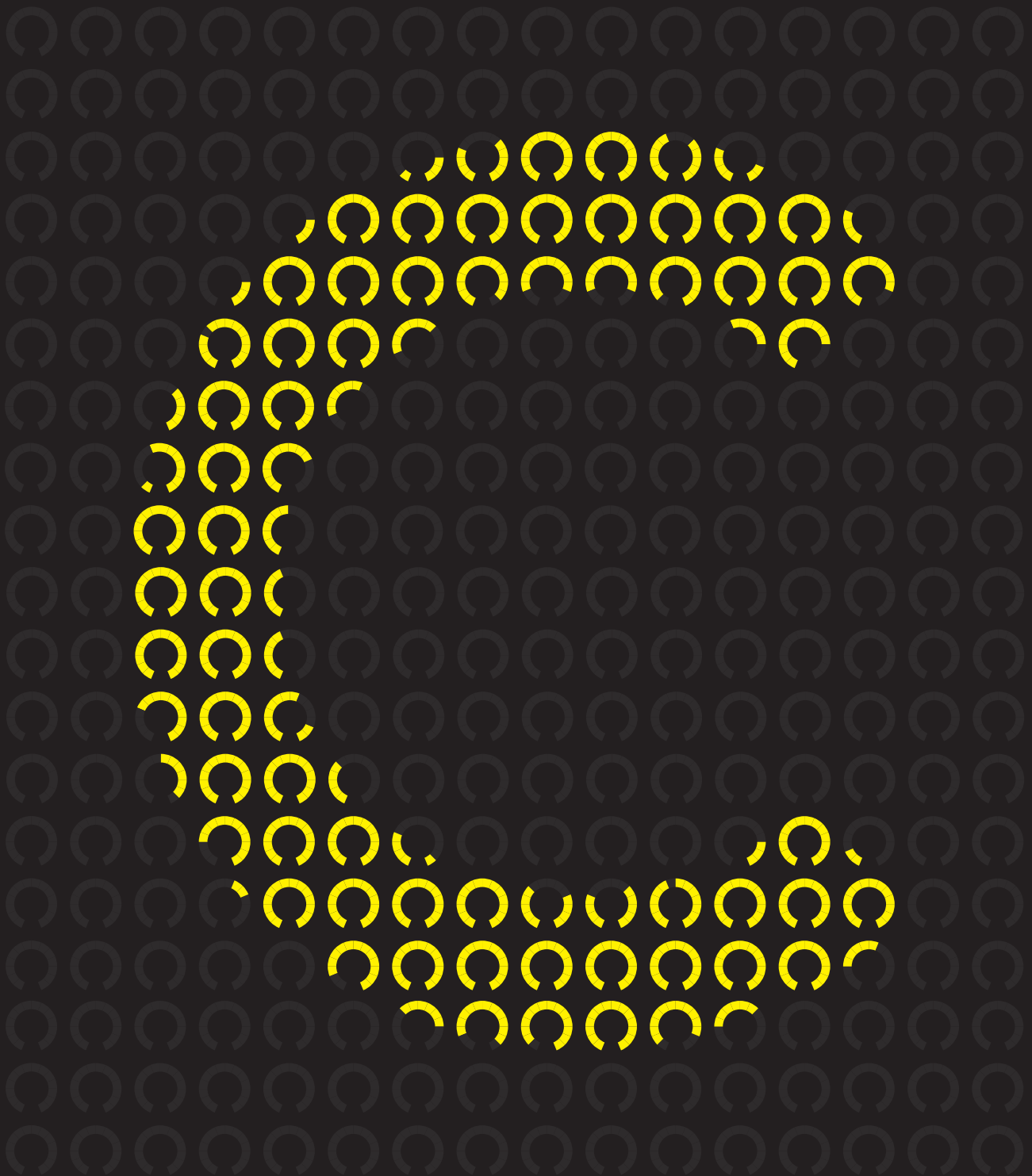


A complete guide to Circle<sup>2</sup>'s features and modules, with tips on how to design sounds.

# circle<sup>2</sup>

F:W



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**Circle<sup>2</sup> and the Future**

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## **ABOUT THIS GUIDE**

This guide is a complete reference to Circle<sup>2</sup>'s features and modules. We recommend reading the basics section and then using this guide as reference when you need information or help related to a specific subject.

Please note that all descriptions and explanations were accurate at the time of writing, for updated copies of this manual, check the website at:  
<http://www.futureaudioworkshop.com/circle/downloads>

## CONVENTIONS OF THIS GUIDE

The following is a list of the conventions used in this guide.

### MOUSE OPERATIONS

We will need to refer to mouse operations when explaining how to use some of Circle<sup>2</sup>'s features. The following is a table highlighting these operations.

Operation	Mac	PC
<b>Click</b>	Press and release the mouse button, without moving the mouse.	Press and release the left mouse button, without moving the mouse.
<b>Click-and-hold</b>	Press and do not release the mouse button.	Press and do not release the left mouse button.
<b>Release</b>	Release the mouse button after a click and hold	Release the mouse button after a click and hold.
<b>Double click</b>	Press and release the left mouse button twice in rapid succession without moving the mouse.	Press and release the left mouse button twice in rapid succession without moving the mouse.
<b>Drag</b>	Click-and-hold the mouse button, then move an object.	Click-and-hold the left mouse button, then move an object.
<b>Drag and drop</b>	Click-and-hold a mouse button, then move an object. Release the mouse button to place the object in a new location.	Click-and-hold the left mouse button, then move an object. Release the mouse button to place the object in a new location.

**NOTE ENTRIES**

Some text will appear as follows:

**NOTE**

*Something about Circle<sup>2</sup> you should note.*

These notes are something that you need to be aware of when doing something.

**TIP ENTRIES**

Every now and then in this document, we may have a useful tip about using Circle<sup>2</sup> that we feel you should know. This will be displayed as:

**TIP**

*Some tip or trick to help you along.*

Now that you are familiar with the basics of this manual, it's time to get on to the basics of Circle<sup>2</sup>.



# Installing and Activating Circle<sup>2</sup>

This chapter covers the basic operations required to get Circle<sup>2</sup> up and running on your computer.

## INSTALLING CIRCLE<sup>2</sup>

Circle<sup>2</sup> is available as either a download version or as boxed CD-ROM.

Follow these steps to install Circle<sup>2</sup> on your computer.



### Mac OS X installation:

1. Insert the Circle<sup>2</sup> Installation CD-ROM into your computer's CD-ROM drive or open the Circle file that you have downloaded.
2. To begin, double click the Circle<sup>2</sup> Installer icon and follow the on-screen instructions.
3. Read the welcome screen and click "continue".
4. Read the software license and choose to agree by clicking "continue".
5. Circle<sup>2</sup> will now start to install on your computer.



### Windows installation:

1. Insert the Circle<sup>2</sup> Installation CD-ROM into your computer CD-ROM drive or open the Circle<sup>2</sup> file that you have downloaded.
2. Double click the circle setup file to begin the installation process.
3. Read the welcome screen and click "Next".
4. Read the software license and select "I accept the agreement" if you agree and click "Next".
5. Select the location Circle<sup>2</sup> will be installed on or leave as the default location and click "Next".
6. Select the formats you want to install (Standalone, VST Plugin and RTAS Plugin) and click "Next".
7. If you have chosen to install the VST Plugin, select your preferred VST folder or leave the default folder path and click "Next".
8. If you have chosen to install the RTAS Plugin, select your preferred folder for RTAS plugins or leave the default folder path and click "Next".

9. Select if you want the installer to create a short cut in Windows start menu.
10. Click “create a desktop icon” if you want to have a shortcut to the stand-alone on your desktop.
11. Check the previously set install paths in the summary and then click “Install” to complete the install process.

## WHERE IS CIRCLE<sup>2</sup> INSTALLED?

### NOTE

*On the Mac, Circle<sup>2</sup>'s main install directory is /Library/Application Support/FAW/Circle and on the PC it is where you set the install directory during the install process.*

*Within this directory are stored your presets, snap shots and various other associated files. Removing this directory will result in Circle<sup>2</sup> not launching.*



On the Mac, the standalone version of Circle<sup>2</sup> is stored in:  
/Applications/

The VST Plugin of Circle<sup>2</sup> is stored in:  
/Library/Audio/Plug-ins/VST

The Audio Unit Plugin of Circle<sup>2</sup> is stored in:  
/Library/Audio/Plug-ins/Components

The RTAS Plugin of Circle<sup>2</sup> is stored in:  
/Library/Application Support/Digidesign/Plug-ins



On Windows, Circle<sup>2</sup> is installed in the folders selected during installation.

By default, Circle's main install directory and the standalone are stored in:  
C:\Program Files\FAW\Circle2

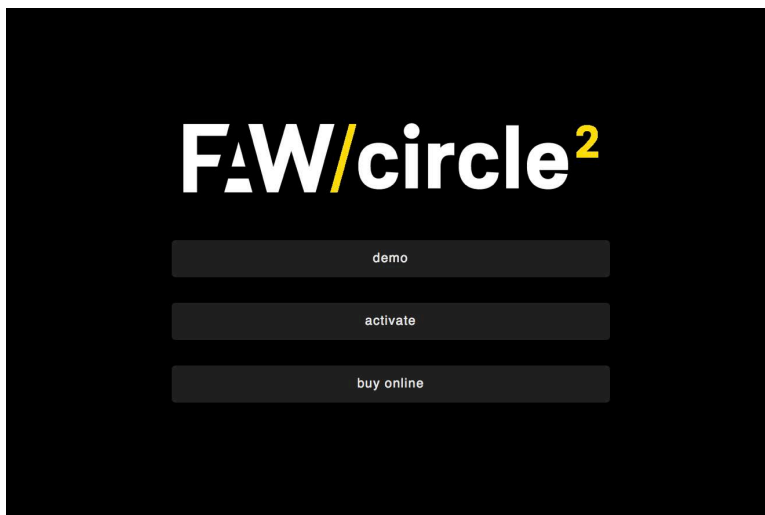
The VST Plugin is stored in:  
C:\program files\steinbe g\vstplugins

The RTAS Plugin is stored in:  
C:\Program Files\Digidesign\DAE\Plug-Ins

## AUTHORIZING CIRCLE<sup>2</sup>

Having installed Circle<sup>2</sup>, it will run in demo mode, where the saving of sounds is disabled and it goes progressively out of tune after 20 minutes. In order to move from demo mode to having Circle<sup>2</sup> fully featured, you need to complete the authorization process. To begin authorization, first launch Circle<sup>2</sup>.

1. Launch Circle<sup>2</sup>, either as a plug-in or as a standalone application.
2. Once Circle<sup>2</sup> starts, you are presented with the following pane. Click “activate”.



3. Having clicked the activate button, you will then be presented with the following activate pane below.



**NOTE**

*If the computer running Circle<sup>2</sup> is online and connected to the internet follow the next 2 steps.*

4. If the computer running Circle<sup>2</sup> is connected to the internet, enter in your Circle<sup>2</sup> Authorization Code in the relevant yellow colored fields. Your Circle<sup>2</sup> Activation code is the 32 digit code that is printed inside the install CD-ROM case if you have bought a boxed version of Circle<sup>2</sup>, or in the Circle<sup>2</sup> Activation Code email if you have bought the download version.
5. Having entered the Circle<sup>2</sup> Activation Code correctly into the box the Activate Online button becomes available. Simply click this button and Circle<sup>2</sup> is now ready for you to start using fully featured.

**NOTE**

*If the computer running Circle<sup>2</sup> is offline and not connected to the internet follow the next 4 steps*

4. On the bottom section of the Activate pane, you will see a green coloured number. Copy this number down and go to a computer that is connected to the internet.
5. On a computer that is connected to the internet, visit:  
<http://www.futureaudioworkshop.com/activatehelp>
6. Follow the on screen instructions. When required, enter in both your Circle<sup>2</sup> Activation Code and the green Activate Circle<sup>2</sup> Offline code. Then click “generate activation file”.  
If both codes are entered in correctly, a download should start of your Activation file, named “circle.kfp”.
7. Move this file to your computer running Circle<sup>2</sup>. On the Activate pane, click “Load Activation File” and navigate to “circle.kfp”, highlight the file and click “open”. Circle<sup>2</sup> will now be ready for you to start using fully featured.

**NOTE**

*The Activate Process, whether your computer is online or offline, generates a key file called “circle.kfp”.*

*On the Mac this file is stored in /Application Support/FAW/Circle2/*

*On the PC it is stored in Circle<sup>2</sup>'s main install directory (see: “Installing Circle<sup>2</sup>”).*

*If you need to reinstall your operating system or upgrade your hard disk, simply copy the key file to an intermediate place. Then once you have completed your reinstallation, copy back the key file to its original directory as listed above. This saves you having to Activate Circle<sup>2</sup> again.*

# 2

## Tour of Circle<sup>2</sup>'s Interface

The following is a quick tour of Circle<sup>2</sup>'s main interface and how its functionality is grouped into different sections. Firstly, we introduce the macro layout of the interface and then look at each of the different panels in more detail.

## CIRCLE<sup>2</sup>'S INTERFACE

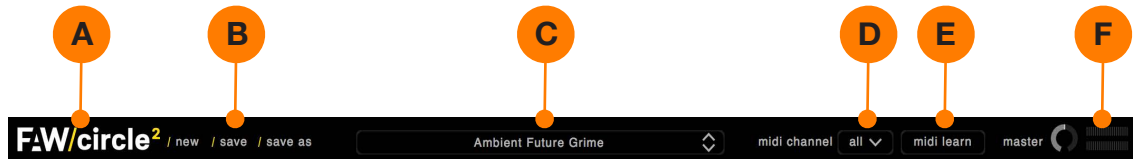
Circle<sup>2</sup>'s interface is broken into three sections, the top panel, the main panel and the bottom pop-up panel. Next we take a brief look at some of the controls and features of these three sections.



- A** Circle<sup>2</sup>'s Top Panel is where functions that are needed regularly, but not directly related to sound design, are accessible.
- B** Circle<sup>2</sup>'s Main Panel is where all the modules and their related controls and knobs are placed. This is where you design your sounds.
- C** Circle<sup>2</sup>'s Bottom Panel is where the keyboard modulation outputs are available along with the buttons to access the bottom panel pop up windows.

## CIRCLE<sup>2</sup>'S TOP PANEL

Circle<sup>2</sup>'s top panel is where a lot of the operations that are needed regularly, but are not directly related to the design and the performance of sounds, are accessible.



- A** **FAW Logo.** Clicking the FAW logo opens the about screen. If you are running in demo mode a text with demo will be shown here. Clicking the demo text allows you to start the activate process.
- B** **New, Save and Save As Buttons** can be used as per their title. For more information on saving sounds and their management see page 66. In Demo mode, the Save buttons are replaced by an activate button. Pressing this button starts the Activate process.
- C** **Currently Loaded Sound.** Clicking this menu item presents you with a list of presets that are currently being returned by the sounds browser. For more information on sounds and their management again see page 66.
- D** **MIDI Channel Receive Selector.** If you are running Circle<sup>2</sup> in standalone mode, this allows you to set the MIDI channel that Circle<sup>2</sup> will respond to.
- E** **MIDI Learn Button** is used to put Circle<sup>2</sup> into the mode used for assigning MIDI controllers to the interface. For more information on MIDI learn and how to use external controllers with Circle<sup>2</sup> see page 79.
- F** **Master Volume Control and Level Meter.** Use the master volume control to set the output volume of Circle<sup>2</sup>. The level meter is an easy way to visually see the volume of Circle<sup>2</sup>.

## CIRCLE<sup>2</sup>'S MAIN PANEL

This is the main part of Circle<sup>2</sup>'s interface and is where you design your sounds. It is arranged so as to follow the basic audio flow within Circle<sup>2</sup>. For more info on the basics of Circle<sup>2</sup> and how its sounds are produced see page 19.



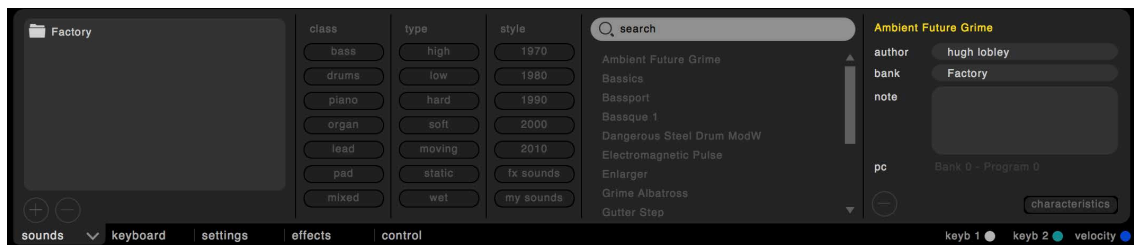
- A** **Source Modules**, this left most section is where all the modules that produce sound are grouped, such as the oscillators, noise and feedback. We refer to any module that creates sound as a source.
- B** **Modifier Modules**, the center section of Circle<sup>2</sup>'s main panel is where modules that effect or change the sound produced by the sources are grouped together. Here you can apply filters, distortion and various other kinds of processes to create your own sounds.
- C** **Modulation Modules**, the right most section is a grouping together of what we call the modulations. Modulations are signals that are used to automatically change the knobs and controls.

## CIRCLE<sup>2</sup>'S BOTTOM PANEL

Circle<sup>2</sup>'s bottom panel is where Circle<sup>2</sup>'s less used and more advanced settings are grouped. A number of buttons along the left hand side are used to access a pop up panel that contains the related settings.

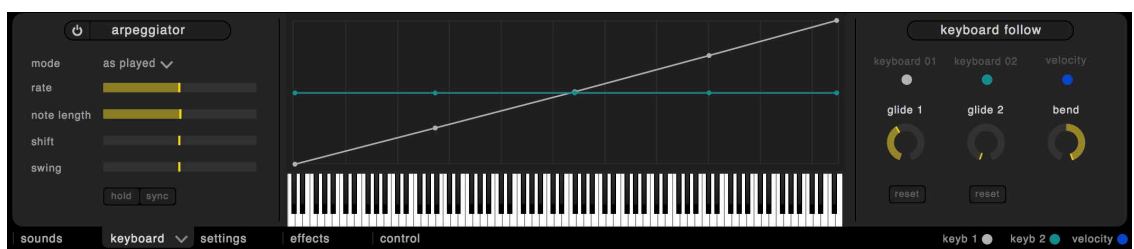


### A Sounds



Clicking the sounds button brings up the sounds browser section. Here you can group together your sounds, manage them and also search and find them easily.

### B Keyboard



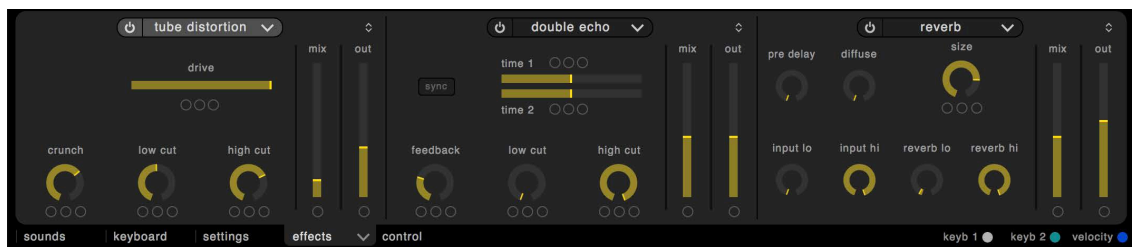
This section of the bottom panel is used for everything related to the keyboard and notes that Circle<sup>2</sup> plays. The keyboard outputs are also repeated on the bottom panel so that they can be accessed when the pop up panel is closed.

## C Settings Panel



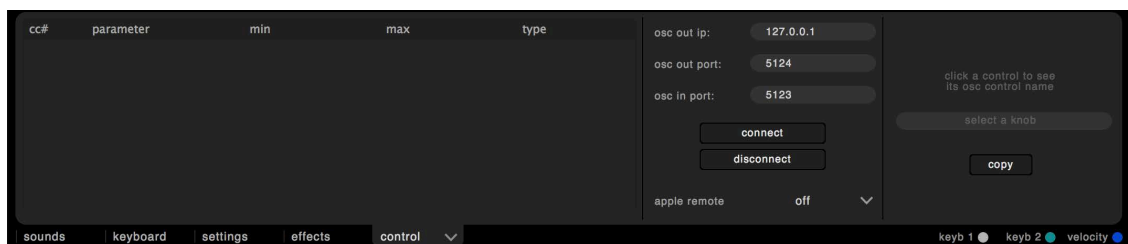
The settings panel is where you can set various parameters associated with Circle2's sound engine, how the voices work and Circle2's BPM. It also includes a randomize function which can be used to randomly generate new sounds.

## D Effects



The effects pop up panel is where Circle2's master effects can be accessed.

## E Control



The control pop is where you can edit and manage the way in which MIDI and OSC controls are assigned.

**F Keyboard Outputs** are repeated on the bottom panel for easy access when the keyboard pop up panel is closed.

# 3

## Basic Concepts

Before delving into the modules used when designing sounds with Circle<sup>2</sup>, we'd like to present some basic concepts.

Firstly, we introduce the term voice and give an overview of how a voice produces sound. In addition, we give a brief introduction to the relationship between notes, pitch and frequency, which is important to understanding for when you go to create your own sounds.

We recommend reading through the sections while at the same time experimenting with Circle<sup>2</sup>'s controls.

## VOICES, SOUNDS AND SOME TERMS

As you know, synthesizers are capable of producing many and varied changing sounds. To produce these sounds, Circle<sup>2</sup> has a number of different modules which are combined and set in different ways to produce a given tone. Each module has associated controls and parameters, which you then adjust to change the way the module creates or effects the sound. The modules you use to produce a single note in Circle<sup>2</sup> when grouped together are called a voice. This term is derived from a voice, as an individual singer in a choir. You use many voices, each producing a single note sound, when you play chords on Circle<sup>2</sup>. In total, Circle<sup>2</sup> has the possibility to have 32 single notes or voices play-ing at the same time. This number is however dependent on the power of your computer: the more powerful your computer, the more simultaneous voices Circle<sup>2</sup> can produce.

The settings and parameters of the modules in Circle<sup>2</sup> that are used to create the sound of a voice are refered to as sounds. These settings are stored in files on your computer and can be saved and reopened for future use. Circle<sup>2</sup> comes with over 200 pre-made sounds which you can use straight away.

The pitch of the note that a voice in Circle<sup>2</sup> is playing can also be described as a frequency. Frequency is measured in a unit called Hertz and denoted by the abbreviation Hz. Think of frequency as a unit to measure how many times in a second something repeats. For example, if an oscillator, which is the most basic sound producing module in Circle<sup>2</sup>, produces a wave that repeats itself 440 times in one second, we say this wave has a frequency of 440 Hz. The speed at which a wave repeats itself, determines its pitch: the faster the wave repeats, the higher its frequency is and the pitch you will hear.

So how does this way of measuring pitch or frequency in the unit Hertz relate to the musical scale? Well, the pitch you hear from a wave with a frequency of 440 Hz will also be the same pitch that your hear when you play the note A4 on a piano. If you play the next note up on the piano, A4 sharp, it will have a frequency of  $440 \times 1.059 = 465.96$  Hz. The number 1.059 is what we use to move the frequency from one note to the next. To move up a note: multiply its frequency by 1.059. This step from one note to another is called a semitone. In other non western cultures, other num-bers other than 1.059 are used to move from one note to the next, which re-sults in the unaccustomed ear thinking the music is out of tune.

This relationship between musical notes, pitch and frequency as a unit of measuring them, is useful to understand when designing sounds. Visually you

can see this with Circle<sup>2</sup>'s LFO module. LFOs (or low frequency oscillators) are simple modules that produce different repeating shapes. The rate at which these shapes repeat are set in Hertz (Hz). When you turn the rate knob on one of Circle<sup>2</sup>'s LFO modules, you will see a pop up window with the Hz value for the current setting being displayed. You will also see that as you turn the rate knob to the left, the Hz value goes down and the wave slows. Setting the rate to 1 Hz, you would see that the wave repeats once every second.



**Circle<sup>2</sup>'s LFO Module**, with visual feedback. Setting rate to 1 Hz, you would see the wave repeating itself once every second.

Human hearing has a limitation, where by it can't hear waves that are slow in repeating i.e. low in frequency. Circle<sup>2</sup>'s LFO's have a range of 0.01Hz to 20Hz, and if you were to connect up the output of the LFO module to a speaker you would hear nothing.

Oscillators, on the other hand, are basically the same as LFOs, just that they can produce much faster repeating waves, in fact fast enough so that the human ear can discern the repeating wave they produce as a distinct note or pitch.

In Circle<sup>2</sup>, the oscillator frequency is set using semitones. When the coarse tune control is at its center position, the oscillator produces a tone that is equal in frequency to that note if it was played on a piano. So, if you press the note A4 on Circle<sup>2</sup>'s keyboard, the oscillators will produce a wave that repeats itself 440 times a second or at 440 Hz. Setting the coarse tune up one notch to 1 semi-tone means that when you repress the note A4 on Circle<sup>2</sup>'s keyboard, you don't hear the note A4, but A4 now up one semitone, which as stated previously is A4 sharp or  $440 * 1.059 = 465.96$  Hz.

Again, experiment with different settings for the oscillators, learn what the difference in pitch is as you change the coarse tune and most of all have fun! If you want to read further on this subject, we suggest visiting the online Wikipedia page for pitch at: [http://en.wikipedia.org/wiki/Pitch\\_\(music\)](http://en.wikipedia.org/wiki/Pitch_(music))

**TIP**

*A very classic synthesizer sound is produced when you set one oscillator with its coarse tune to center and use a second oscillator with its coarse tune set 5 semi-tones lower. This tuning of one oscillator down by 5 semi-tones or by a fifth in relation to another is useful in creating vintage pad sounds.*

## MODULATION AND CIRCLE<sup>2</sup>

Modulation is one of the key elements to creating sounds with Circle<sup>2</sup>. In the next section we give an overview of modulation. In the following sections you will encounter references to Circle<sup>2</sup>'s modules. If you need help understanding a module's functionality, jump to the modules section in "Circle<sup>2</sup>'s Audio Engine", page 27.

### MODULATION OVERVIEW



**Connecting Up Modulation in Circle<sup>2</sup>**, simply drag the output circle of a modulation module and place it in one of the empty modulation input holes underneath the desired knob or control.

In order for your sound to have a moving or dynamic element or to emulate the way sound changes with time, as in acoustic instruments, synthesizers use something known as modulation. A simple definition of modulation is something that changes something else.

By way of an example of how to use modulation we can look at how the sound of a guitar string being struck changes as time passes. When a note is played on a guitar string, it usually starts from being silent, then as you hit the string, you hear a sudden increase in volume to a peak, then it lowers in volume, stays or sustains at this volume for a few seconds, before the sound fades out back to silent. This changing volume as time passes is called amplitude modulation and can be achieved by using Circle<sup>2</sup>'s ADSR envelope. Think of modulation as an extra pair of hands, that can automatically turn knobs and controls, at speeds faster than you can. In this amplitude modulation case, we need to change the volume of the voice so we attach the ADSR modulation to the VCA level control.

The fast increase in volume that you hear when you pluck the string is known as the attack and can be very fast. The decrease in volume to a more steady or sustain level is known as decay and the final fade out time to silence known as release. These 4 stages in a notes life, attack, decay, sustain and release are abbreviated to the acronym ADSR.

Just as the volume of a note changes over time, so does its frequency content. When you first play a note, the high frequency or fast repeating waves have a strong presence in the sound, but as time passes they run out of energy and the sound contains mostly the slower low frequency waves. Think of it like the tortoise and the hare, the hare starts fast but runs out of energy, whereas the tortoise stays slow, but lasts longer. To emulate these changes in the frequency content of a note played, we again use an ADSR modulation, but attach it to the filter frequency control.

The filter in a synthesizer is used to remove different frequencies produced by the sources. In the case of a low pass filter, the filter lets through frequencies below the value of its frequency setting, with frequencies occurring after being steadily decreased in level. By attaching an ADSR modulation to the filter frequency control, at the start or attack stage of the note we can let through high frequencies and then steadily start decreasing the filter's frequency setting, so that as time passes only lower frequencies are let through the filter. This removing of frequencies with a filter to emulate the way high frequencies disappear from the sound of a note as time passes is where the term subtractive synthesis comes from.

Again experimentation is the key and with Circle<sup>2</sup>'s modulation feedback, you can see the way the modulation is changing.

**TIP**

*Think of modulation like an extra pair of hands that can automatically turn Circle<sup>2</sup>'s controls.*

**NOTE**

*The volume and the frequency content of a note played on a real instrument changes as time passes. An ADSR envelope can automate these changes. Connect up the ADSR envelope to the level control of the VCA to emulate the changes in volume and connect the ADSR envelope to the frequency control of the filter to emulate the changing frequency content.*

## CONNECTING MODULATION IN CIRCLE

The modules in Circle<sup>2</sup> that produce modulation all have large color coded circles, which is the output of the modulation. You can move these modulation output circles around Circle<sup>2</sup>'s interface and place them underneath the knobs and controls that you want the modulation to affect.



- A** **Modulation Output Circle<sup>2</sup>**, click and drag this circle and place underneath the knob or control that you want the modulation to be applied to.

## MAKING A CONNECTION

1. First click and hold the modulation output circle<sup>2</sup> of the module that you want to connect.
2. Drag the modulation output circle away from the modulation output hole. As you will see there is now a modulation circle<sup>2</sup> attached to the mouse.
3. Move the modulation circle to the desired control and hover it over an empty hole beneath the control. If there are no free modulation input holes, you can replace an existing modulation connect by placing the modulation circle<sup>2</sup> over an existing connection.
4. By placing the modulation circle<sup>2</sup> over a modulation input hole, you can immediately hear its effect. If you are happy with making the connection, simply release the held mouse button and the connection is made.

## REMOVING A CONNECTION

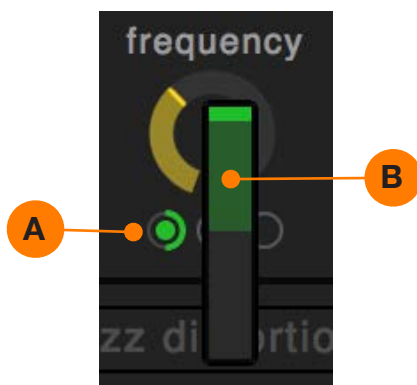
To remove an existing connection, click and hold on the desired modulation connection you want to remove and drag the modulation circle<sup>2</sup> to an area of the screen that is blank and release the held mouse button. The modulation circle<sup>2</sup> will disappear and the connection is removed.

## REPLACING A CONNECTION

Sometimes, there may not be a modulation input hole free underneath a desired control. To replace a connection, simply click and hold the modulation output you want, drag the modulation circle and place it over the connection you want to replace. Then release the mouse button and the old connection is replaced with the new modulation circle<sup>2</sup>.

## SETTING THE AMOUNT OF A CONNECTION

To set the amount by which a modulation affects a control, single click on the connection circle<sup>2</sup>. A large slider will then appear, which you can use to set the amount. A small ring around the connection shows you how much the modulation is affecting the control.



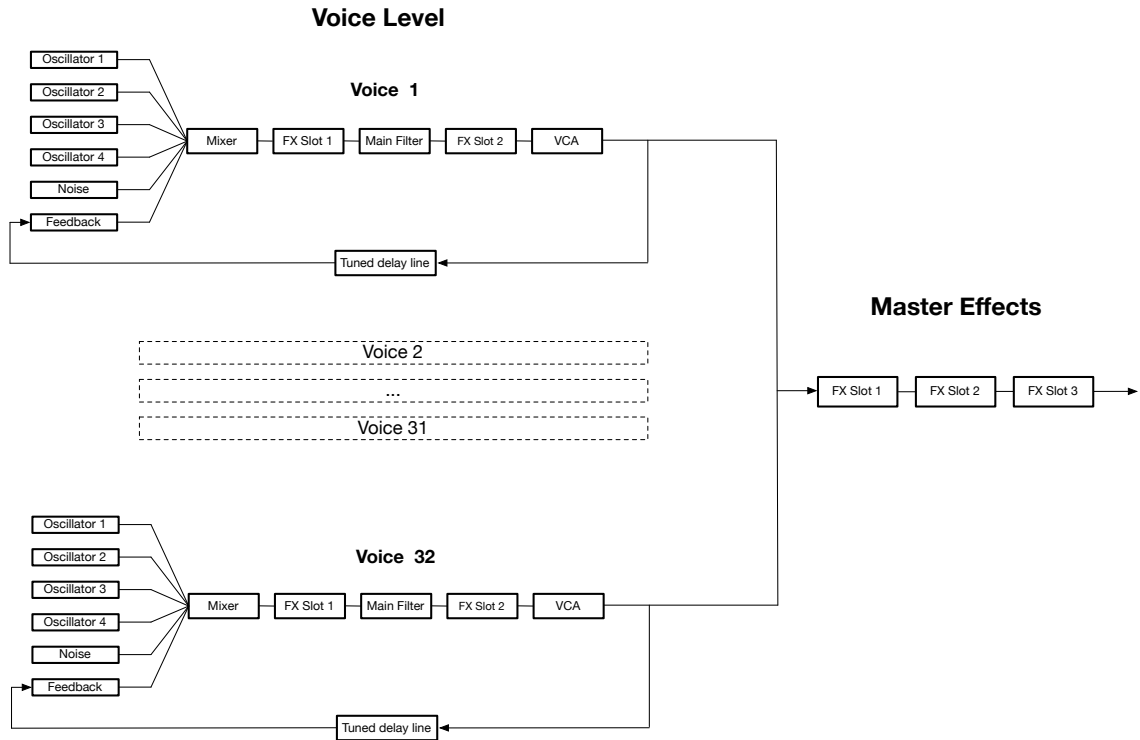
- A** **Modulation Connection Outer Ring** gives permanent feedback on the amount of the modulation connection.
- B** **Modulation Amount Slider** is used to set the amount of the modulation connection.

# 4

## Circle<sup>2</sup>'s Audio Engine

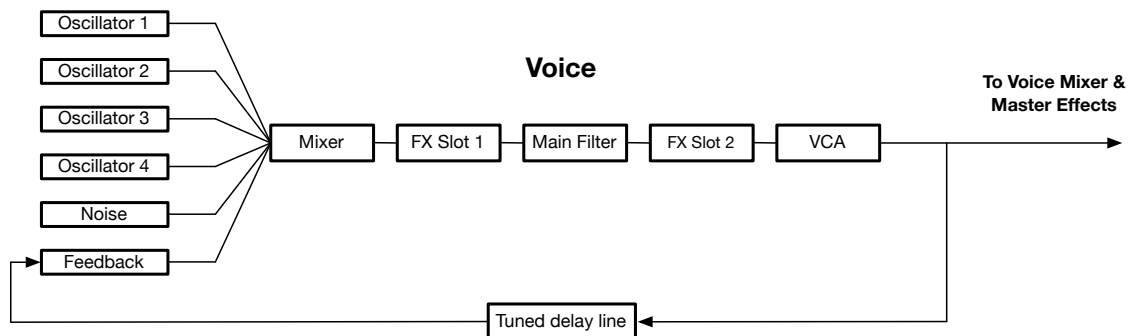
Circle<sup>2</sup>'s audio engine is where behind the scenes the various sounds are produced using sources, modifiers and modulation modules.

## CIRCLE<sup>2</sup>'S AUDIO PATH



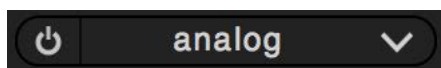
Above is a schematic view of Circle<sup>2</sup>'s audio path. There are 32 voices in Circle<sup>2</sup> with the output of each voice mixed together before being sent to the master effects. Below is a diagram of the voice audio path.

## A SINGLE CIRCLE VOICE



## SOUND SOURCES

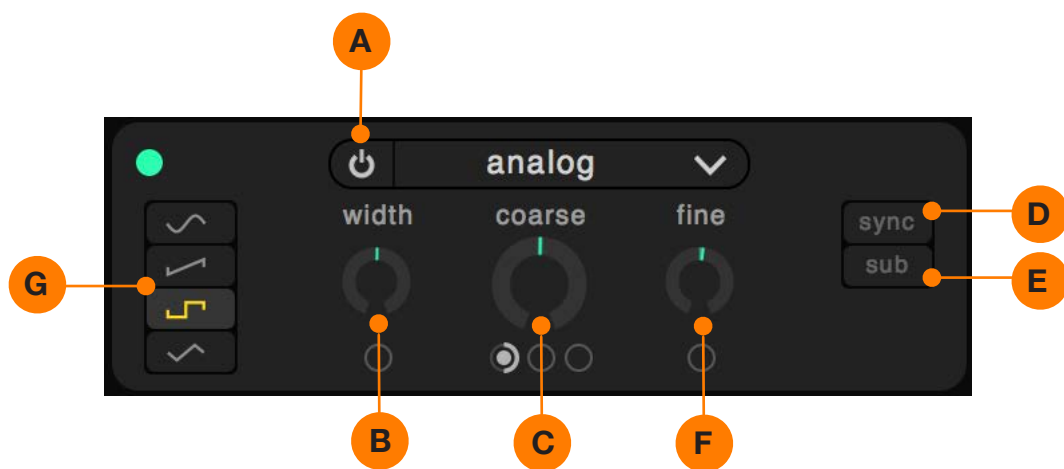
Circle<sup>2</sup>'s sound sources are the modules that produce sound and are grouped together in the left hand column of Circle<sup>2</sup>'s main panel. There are 4 oscillator slots, with the option of each slot to contain either an Analog or Wavetable Oscillator. Below the Oscillator slots are the Noise and Feedback modules. In the following section we go through each of the source modules, list their parameters and give some tips on their use.



The module selector drop menu is used to choose the module that you want in a slot.

### ANALOG OSCILLATOR

The analog oscillator produces the classic tones of the famous synthesizers from yesteryear. It can produce a sine, saw, square or triangle waveform. It is also capable of oscillator hard sync.



- A** **Module On/Off Switch** is used to turn the analog oscillator on and off. Turning the module off is useful to save processor usage.
- B** **Width** is used to set the pulse width of the square and triangle. The triangle waveform can go from down saw to up saw.
- C** **Coarse Tune** is used to set the tune of the oscillator in the range of +/- 24 semitones.

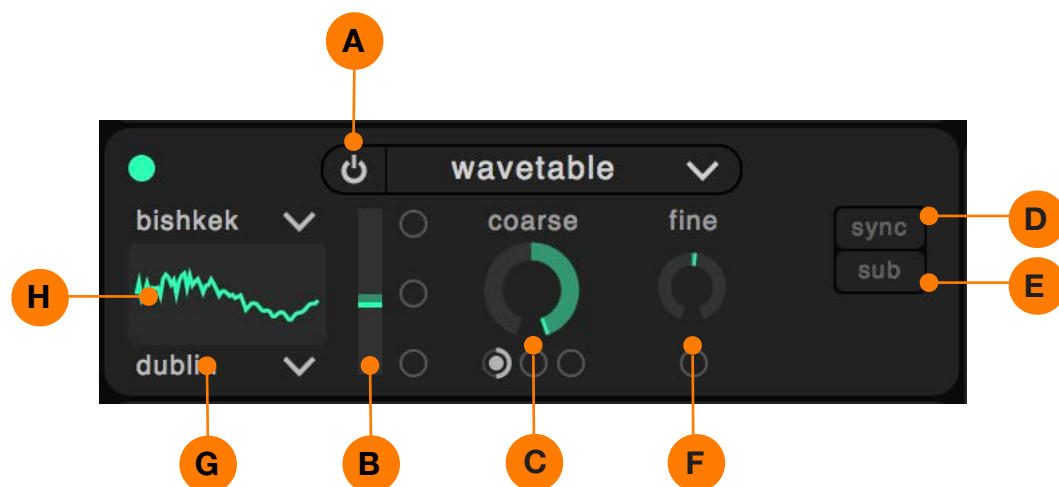
- D Sync Button** when present, turning on sets the oscillator to “slave” to the “master” oscillator directly underneath.
- E Sub Button**, turn on for the oscillator to go into low frequency mode, so it can be used as an LFO.
- F Fine Tune** this is used to finely adjust the pitch of the oscillator by +/- one semitone.
- G Wave Shape Buttons** are used to select the different wave shapes produced by the oscillator.

**TIP**

*Hard sync is a classic synthesis trick that is used to good effect in the lead line of Daft Punk's “Robot Rock” song. Hard sync is where the slave oscillator's waveform is forced to restart its cycle each time the master oscillator completes its cycle. It produces formant like sounds when you change the frequency of the slave oscillator. To achieve this tone, turn on Oscillator 1, click the sync button and set the coarse tune to its center position. Then assign an envelope to the coarse tune and turn on Oscillator 2, tuning down -24 semi-tones. Start playing notes and while adjusting the tune of both oscillators and experiment until you get a sound you like.*

**WAVETABLE OSCILLATOR**

Circle2's wavetable oscillators are a great way of adding more modern tones to your music. There are over 100 wavetables available to choose from, covering a wide range of tones from aggressive sounds to more soft sine wave tones.



- A** **Module On/Off Switch** is used to turn the wavetable oscillator on and off. Turning the module off is useful to save processor usage on patches.
- B** **Wavetable Morph** slider is used to morph between the upper and lower selected wavetable.
- C** **Coarse Tune** is used to set the tune of the oscillator in the range of +/- 24 semitones.
- D** **Sync Button** where present, turning on sets the oscillator to “slave” to the “master” oscillator directly underneath.
- E** **Sub Button**, turn on for the oscillator to go into low frequency mode, so it can be used as an LFO.
- F** **Fine Tune** this is used to finely adjust the pitch of the oscillator by +/- one semitone.
- G** **Wave Shape Buttons** are used to bring up the wavetable selection window, where you can pick the upper and lower wavetables.
- H** **Wavetable Morph Feedback** is a window that shows you what the current wave shape looks like as you morph from the upper and lower wavetables.

**TIP**

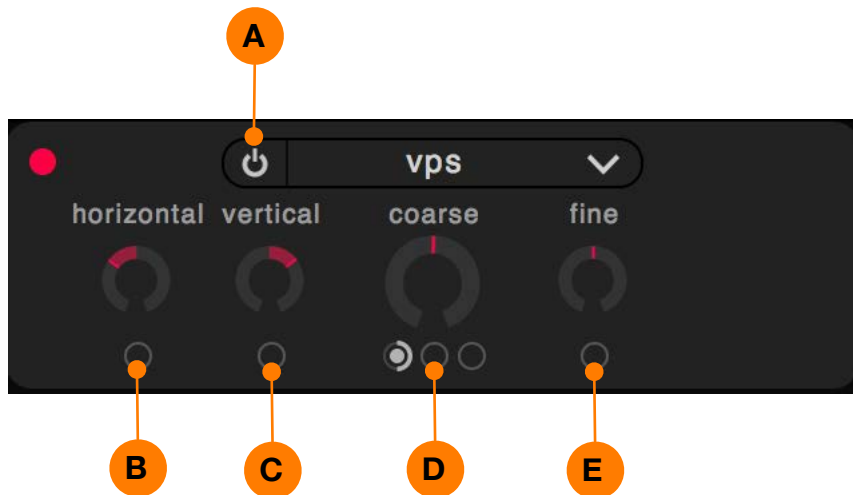
*The wavetables have some interesting shapes. Use them in sub mode as interesting non-traditional LFO's.*

**TIP**

*Apply the keyboard follow to the wavetable morph control and have the sound evolve as you play higher notes.*

## VPS OSCILLATOR

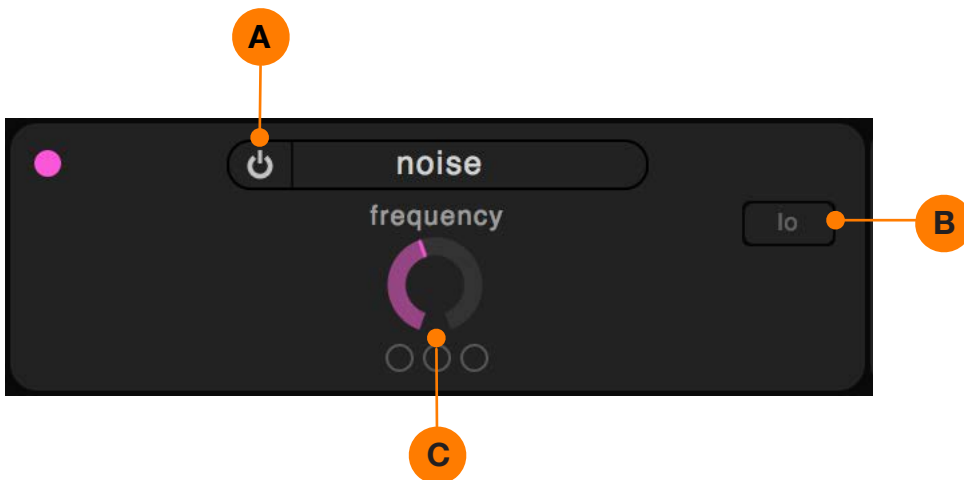
The VPS oscillator works by glueing together a pair of sine waves with specified frequencies. Via its two parameters - which control the frequencies of the sine waves and the location at which they are glued - the VPS oscillator provides direct control of the waveform's intricate harmonics.



- A** **Module On/Off Switch** is used to turn the analog oscillator on and off. Turning the module off is useful to save processor usage.
- B** **Horizontal** controls the location at which the component sine waves are joined together.
- C** **Vertical** controls the frequencies of the oscillator's component sine waves.
- C** **Coarse Tune** is used to set the tune of the oscillator in the range of +/- 24 semitones.
- F** **Fine Tune** this is used to finely adjust the pitch of the oscillator by +/- one semitone.

## NOISE

The noise module produces what is known as white noise, that is noise containing all frequencies. Circle2's noise module also comes with an in built filter which allows you to change the frequency content of the noise to suit. The noise module is useful for everything from creating hit-hats or other percussive sounds, to adding a bit of “dirt” to snappy bass sounds.



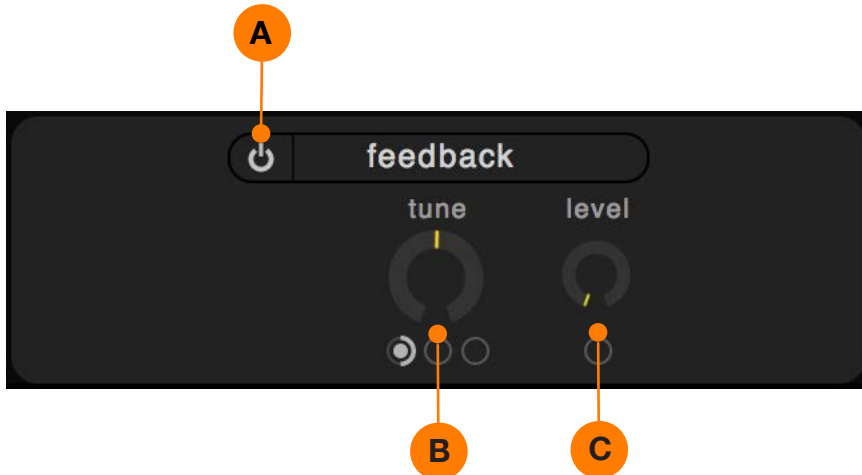
- A** **Module On/Off Switch** is used to turn the noise module on and off. Turning the module off is useful to save processor usage on patches.
- B** **Filter Type** is used to select the noise filter shape. Using the filter allows you to change the frequency content of the noise.
- C** **Filter Frequency** is used to set the cut off frequency of the noise filter.

**TIP**

*Applying an LFO to the noise filter frequency allows you to create moving “swooshing” sounds.*

## FEEDBACK

The feedback module is a way of creating trashy feedback sounds. The input to the feedback module is the output of the VCA and it is stored in a delay line. The output of the delay line is then fed back into Circle<sup>2</sup>. The length of the delay line is set via the tune control and allows you to tune the feedback to a musical pitch.



- A** **Module On/Off Switch** is used to turn the feedback module on and off. Turning the module off is useful to save processor usage on patches.
- B** **Tune** sets the feedback delay line's tune. It can be set in the same way as the oscillators coarse tune, with a range of +/- 24 semitones.
- C** **Level** is used to set the amount of the delay line that is put back into the feedback loop.

**TIP**

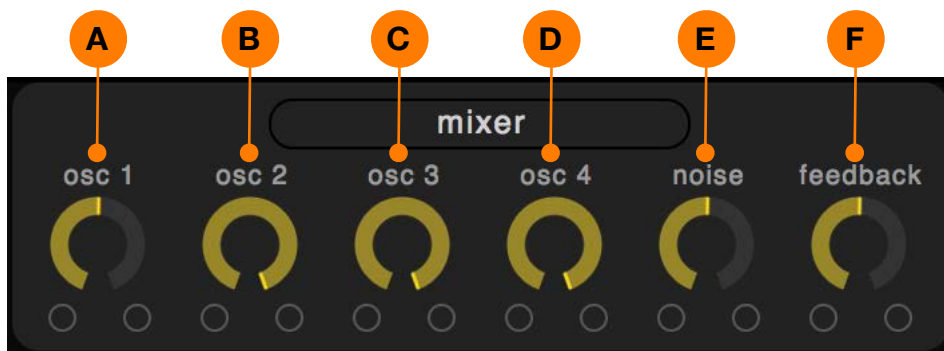
*Attach the keyboard follow to the tune control and let the delay line play in tune with the oscillators. Be careful of the level control though, as a high value can cause Circle<sup>2</sup> to produce some high volume sound that could damage your speakers or hearing.*

## SOUND MODIFIERS

The sound modifiers in Circle<sup>2</sup> are the modules that change or effect the sound produced by the sources, and are grouped in the center column of Circle's main interface. The flow of audio goes from the mixer, where you can set the level of the various sources, to the pre-filter effects slot, through the main filter, through the post filter effects slot and into the main effects.

### MIXER

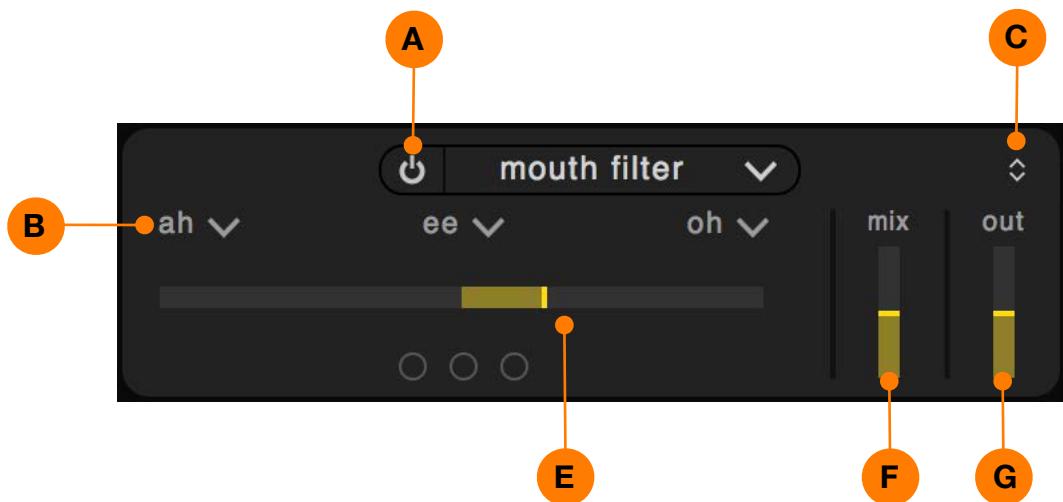
All the sound sources are first fed into the mixer module, where their level can be set. They are then mixed together before being fed into the pre filter effects slot.



- A Oscillator 1 Level**  
use to set the level of Oscillator slot 1.
- B Oscillator 2 Level**  
use to set the level of Oscillator slot 2.
- C Oscillator 3 Level**  
use to set the level of Oscillator slot 3.
- D Oscillator 4 Level**  
use to set the level of Oscillator slot 4.
- E Noise Level**  
use to set the level of the noise.
- F Feedback Level**  
use to set the level of the feedback.

## MOUTH FILTER

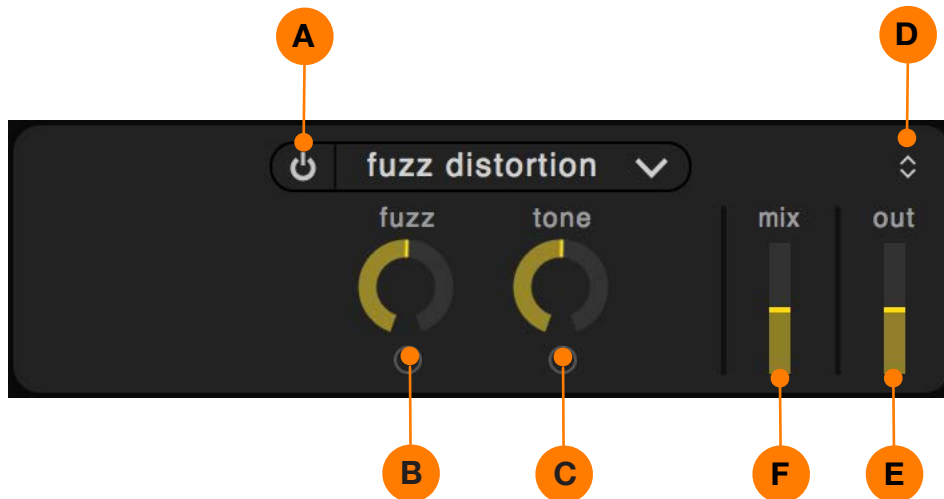
The mouth filter consists of 3 resonant band pass filters in a row. Each filter resonates at a certain frequency, dependent on what mouth shapes you have selected from the drop menus. This filter is more performance oriented, with a playable slider, over providing you with a way of making Circle<sup>2</sup> speak.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Mouth Shape Selectors**, use these drop menu to select the mouth shape for a given position on the slide run.
- C** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- D** **Output Volume**, this slider allows you to set the level of the signal that returns from the mouth filter.
- E** **Mouth Shape Morph Slider**, depending on its position, this slider morphs between each of the 3 selected shapes.
- F** **Mix** is used to set how much of the input audio is sent into the mouth filter. When set to full position, you only hear the effect.

## FUZZ DISTORTION

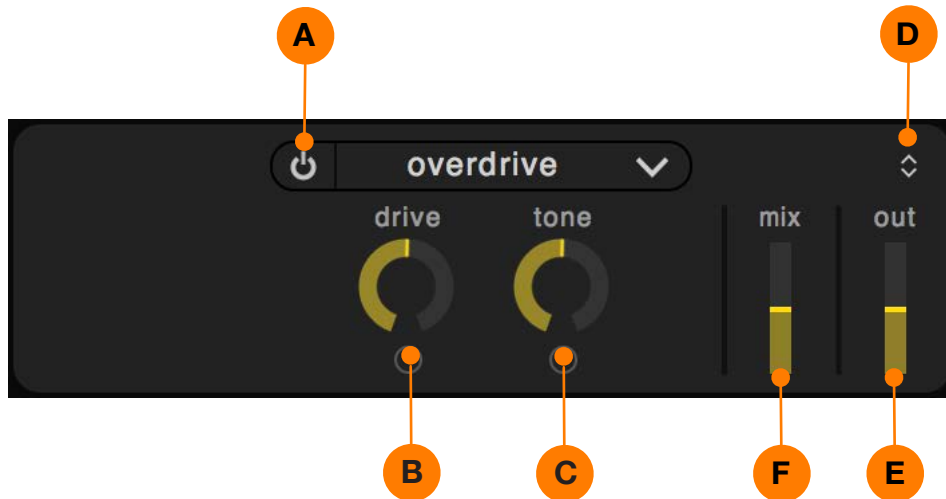
The fuzz distortion is an effect which you can use to add some fuzzy distortion to your sounds. The fuzz control knob sets the amount, with the tone control allowing you to adjust the tonal quality of the effect.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Fuzz** is the control you use to apply more fuzz sound to the incoming signal.
- C** **Tone** is a simple tone filter which you can use to thin out the fuzz effect if it is too bass heavy.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the distortion.
- F** **Mix** is used to set how much of the input audio is sent into the distortion. When set to full position, you only hear the effect.

## OVERDRIVE

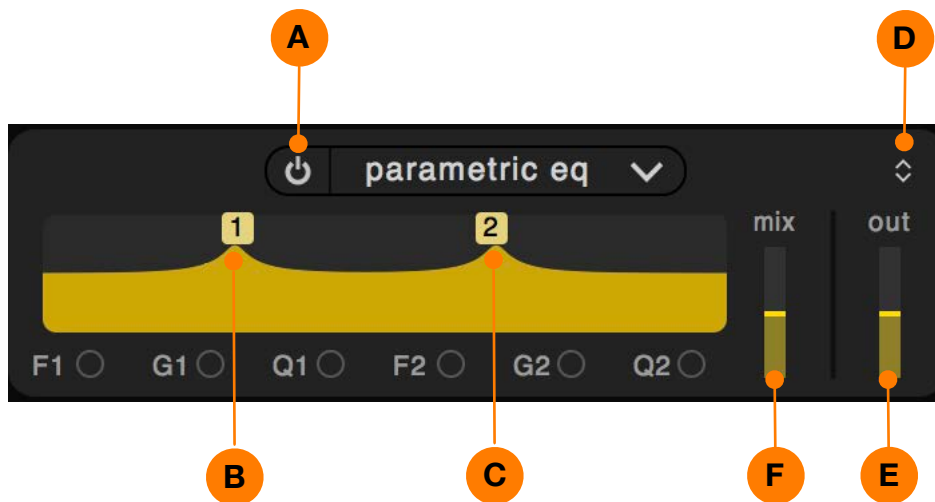
The overdrive module is similar in operation to the fuzz distortion, but gives what is known as asymmetrical distortion to the incoming sound. This is similar to what happens inside a valve or tube.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Drive** is the control you use to apply more drive distortion to sound the incoming sound.
- C** **Tone** is a simple tone filter which you can use to thin out the overdrive effect if it is too bass heavy.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the overdrive.
- F** **Mix** is used to set how much of the input audio is sent into the overdrive. When set to full position, you only hear the effect.

## PARAMETRIC EQ

The Parametric EQ is a simple two band equalizer, with control over frequency, gain and Q. Q, or quality, refers to the sharpness or width of the the equalizers band. Gain is the amount of boost or cut that the band imparts on the audio coming in. The higher the Q value, the less frequencies in the vicinity of the equalizer's frequency setting will be effected. If your unfamiliar with equalizers, just experiment with different settings and you'll soon hear what is happening.



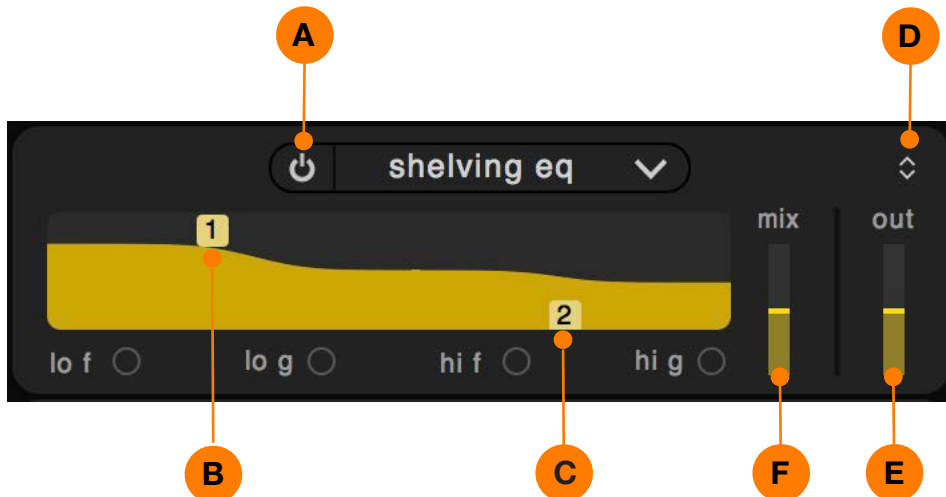
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **EQ 1** is the control you use to set the frequency, gain and Q of the first equalizer. To set the Q, right click on the PC or ctrl click on the Mac and move the mouse up and down.
- C** **EQ 2** is the control you use to set the frequency, gain and Q of the second equalizer.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the EQ.
- F** **Mix** is used to set how much of the input audio is sent into the EQ. When set to full position, you only hear the effect.

**TIP** 

*To apply modulation to the equalizers, use the module input underneath the graph. F1 refers to the frequency of EQ 1, G1 refers to the gain and Q1 refers to the Q. For EQ 2 its the same F2, G2 and Q2.*

## SHELVING EQ

Circle's shelving equalizer allows you to boost and cut the high and low frequencies of the incoming sound. Equalizer 1 is the low boost/cut and equalizer 2 is the high boost/cut. Unlike the parametric equalizer, there is no Q control present.



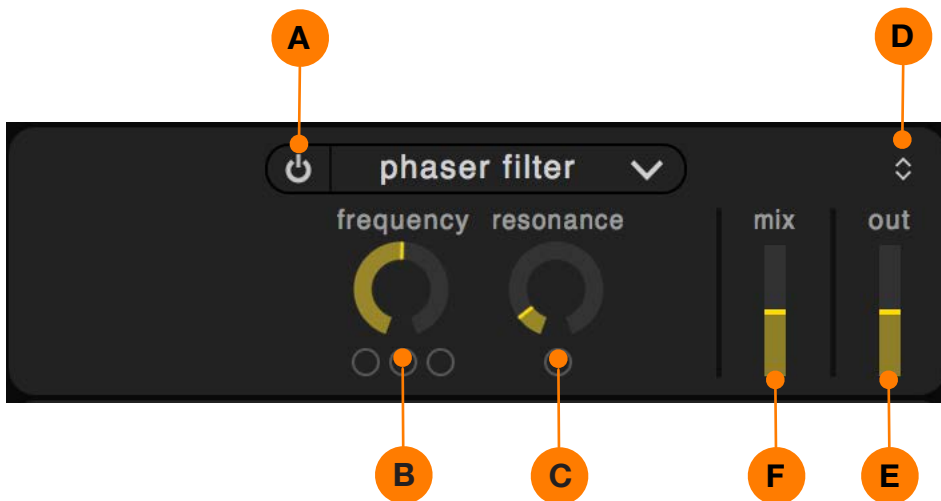
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **EQ 1** is the control you use to set the frequency and gain of the low boost and cut.
- C** **EQ 2** is the control you use to set the frequency and gain of the high boost and cut.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the EQ.
- F** **Mix** is used to set how much of the input audio is sent into the EQ. When set to full position, you only hear the effect.

### TIP

*The Shelving EQ is a great way to add more bass to your sound. If you want to have this bass boost move with your oscillators as you play higher notes, assign the keyboard follow to the frequency parameter, using the “low F” modulation input hole.*

## PHASER FILTER

The phaser filter is a six stage analog modeled phaser, but without any internal modulation.



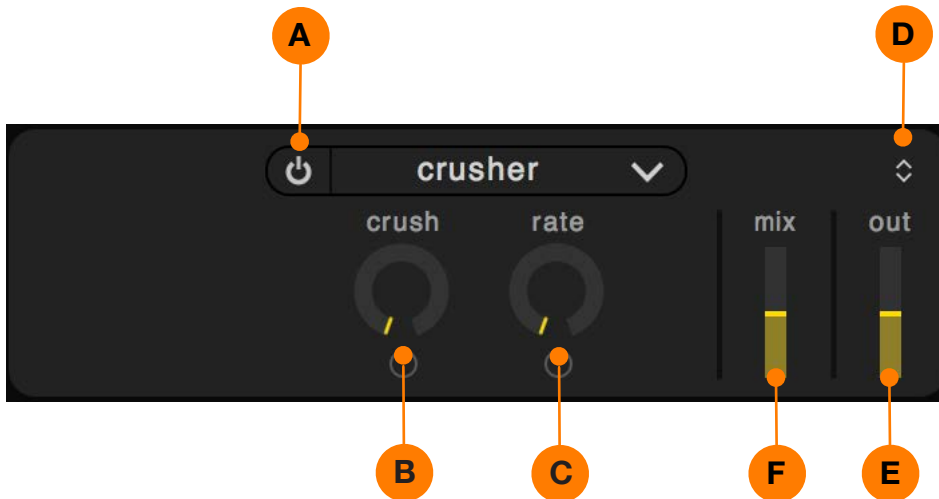
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Frequency** is used to set the position of the phaser filters
- C** **Resonance** is used to control the way the different phaser filter resonate.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the phaser filter .
- F** **Mix** is used to set how much of the input audio is sent into the phaser filter. When set to full position, you only hear the effect.

### TIP

*Apply an LFO to the phaser frequency and the module behaves like a standard phaser. Another trick is to apply the keyboard follow so the phaser follows the oscillators as you play on the keyboard, giving an even phasing sound.*

## CRUSHER

The crusher module is a simple way to trash up the sound of Circle<sup>2</sup> by reducing the bit and sample rates. It produces inharmonic distortion in the signal, which can be used to emulate some of the early digital synthesizers.



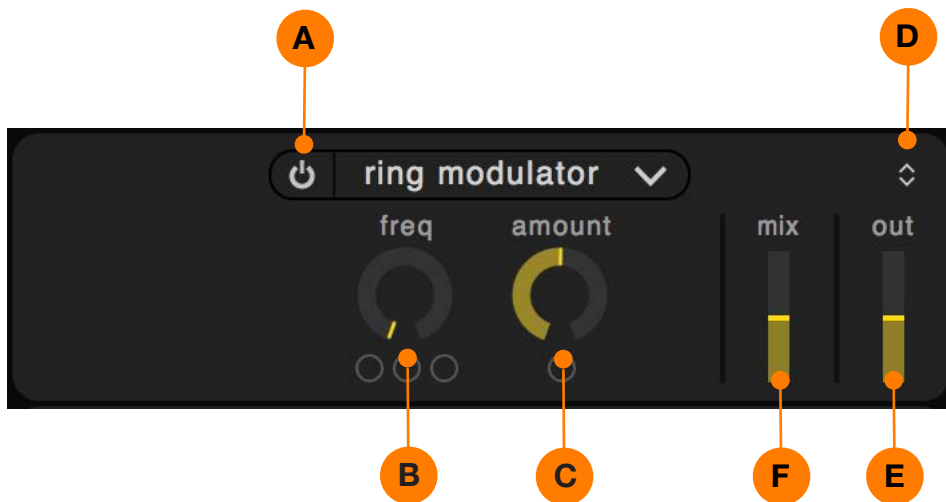
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Crush** is used to set the bit depth of the input to the module. Rather than just allowing you to reduce by multiples of 2, you can also have fractional bit depths.
- C** **Rate** is used to reduce the sample rate and introduce the often dreaded sometimes loved aliasing effect.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the crusher.
- F** **Mix** is used to set how much of the input audio is sent into the crusher. When set to full position, you only hear the effect.

### TIP

*Applying a modulation to the rate control can produce some interesting inharmonic sounds that have a digital formant, almost mouth filter type character.*

## RING MODULATOR

Ring modulators have been present in synthesizers since the large modular systems of the 1970s. They operate by amplitude modulation, which in simple terms means that the level of the input signal is increased and decreased as time passes, and how fast and at what amount the volume changes, is set by the freq and amount control. When you increase and decrease the amount at high freq settings, side bands or new frequencies start to appear in the sound. Again, experimentation is the key here.

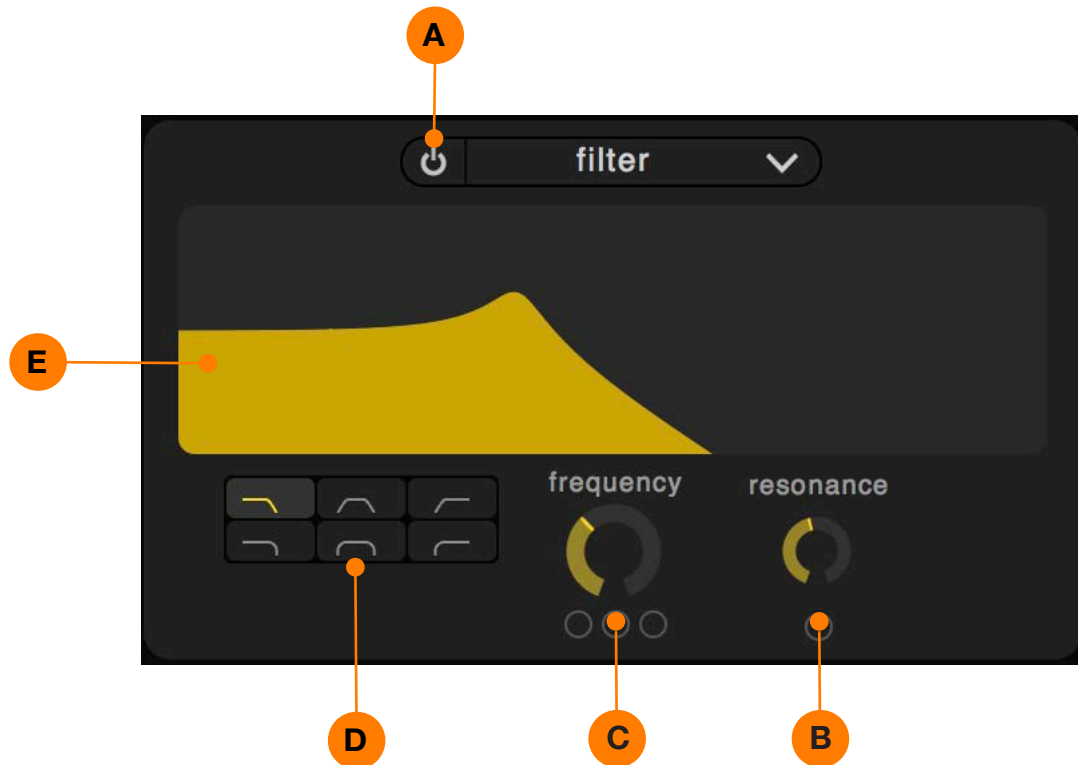


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Freq** is used to control the speed of the increase and decrease in the volume of the input signal. High rates result in new tones in the output signal.
- C** **Amount** is used to control the level of new tones that are created in the sound. Setting to full, means you hear only the new side band tones.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the ring modulator.
- F** **Mix** is used to set how much of the input audio is sent into the ring modulator. When set to full position, you only hear the effect.

**FILTER**

To synthesizer enthusiasts, filters are one of the most important modules. In Circle<sup>2</sup> we have taken a lot of time and effort to create an excellent sounding analog modeled filter, based on the the Pro-One synthesizer, but with some extra added enhancements. Circle<sup>2</sup>'s analog filters have the ability to be low pass, high pass and band pass and in 2 and 4 pole modes. Low pass means that (the following goes for the other modes also) the filter lets through low frequency sounds, up to the point that the filter cutoff or frequency is set to. The number of poles then decides how quickly the frequencies after the the cutoff reduce in volume. The more poles the faster the frequencies after the cutoff get reduced in volume. This is depicted in the graph displayed on the analog filter and can be used to judge how the filter is effecting the sounds being sent in. The number of poles can sometimes be described as the slope of the filter, more poles means a steeper slope and like a hill, the steeper the slope, the quicker you reach the ground or in our case zero volume.

Another important aspect of a filter is resonance. Resonance is a simple feedback loop, where some of the output of the filter is fed back into the input. This produces a loop that is tuned to what ever the frequency control is set to. At high resonance values, the feedback loop starts to go into self oscillation, in simpler terms, it starts to produce its own sound, a simple sine wave. In Circle<sup>2</sup> all the filter modes self oscillate and do not only produce a simple sine wave, but a more complex distorted sine wave, as a real analog filter does, with extra harmonics that provide a rich sound.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Resonance** is used to set the amount of filter feedback. At high values the filter starts to produce a distorted sine wave at the frequency that the filter is set to
- C** **Frequency** is used to set the cut off point of the filter, frequency that occur after this point are reduced in volume at a rate depending on the number of poles.
- D** **Filter Type Selector**, use this drop menu to set the type of filter you want, low pass, high pass or band pass in 2 or 4 pole flavours
- E** **Filter Response Graph** is a visual representation of the way the filter is going to effect incoming sounds, with the vertical axis representing volume and horizontal axis representing frequency. Every where that is yellow is allow through the filter, with the resonance peak showing how much frequencies at that point and its near vicinity will be boosted.

**TIP**

Select the four pole low pass mode and set the resonance control to full. Now attach the keyboard follow and you have a harmonically rich sine wave oscillator that you can play using the keyboard.

## DUAL FILTER

The dual filter is based on the same analog model as the single filter, but this time there are two, which can be setup as acting side by side or one after another using the parallel/serial switch.

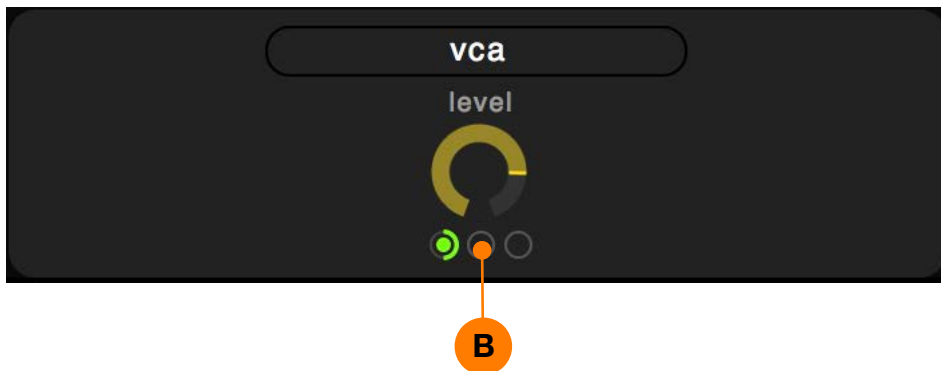


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Filter Type Selector**, use this drop menu to set the type of filter you want, low pass, high pass or band pass in 2 or 4 pole flavours. The upper selector is for filter 1, the lower for filter
- C** **Frequency 2** is used to set the cut off point of the second filter, frequencies that occur after this point are reduced in volume at a rate depending on the number of poles.
- D** **Resonance 2** is used to set the amount of filter feedback. At high values, the filter starts to produce a distorted sine wave at the frequency that the filter is set to
- E** **Serial/Parallel** is used to set whether the filters are placed side by side or one after another.

- F** **Resonance 1** is used to set the amount of filter feedback. At high values, the filter starts to produce a distorted sine wave at the frequency that the filter is set to
- G** **Frequency 1** is used to set the cut off point of the second filter, frequencies that occur after this point are reduced in volume at a rate depending on the number of poles.
- H** **Filter Response Graph** is a visual representation of the way the filter is going to effect incoming sounds, with the vertical axis representing volume and horizontal axis representing frequency. Every where that is yellow is allowed through the filter, with the resonance peak showing how much frequencies at that point and its near vicinity will be boosted.

### VCA

The VCA is the final module in Circle<sup>2</sup>'s main sound design line or voice. Its output is mixed with the other voices that are playing and sent to the master effects, which reside in the effects section of Circle<sup>2</sup>'s bottom panel. Internally the VCA is nothing more than a simple volume control.



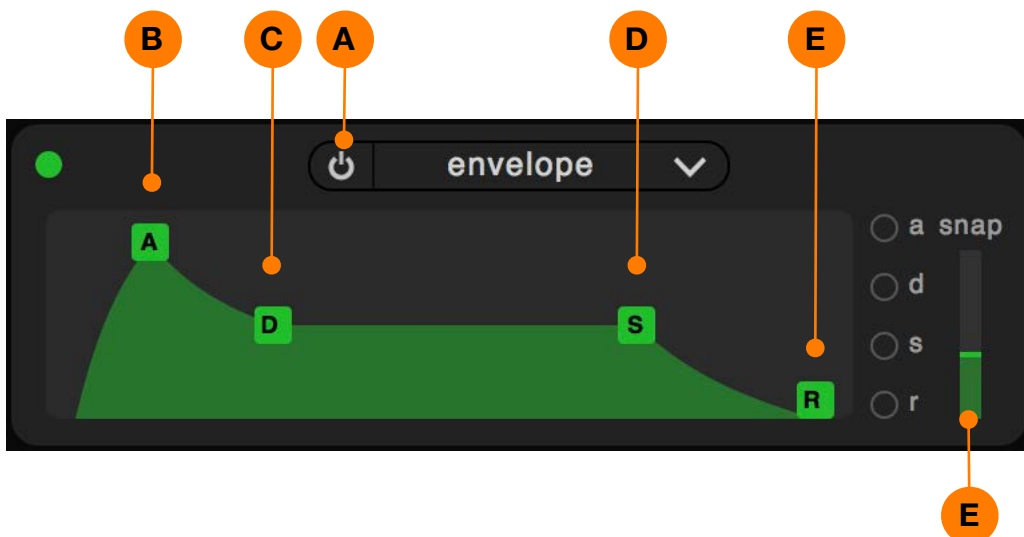
- A** **VCA Level** can be used as a volume control for the sound. It's also the best place to attach an envelope to.

## MODULATIONS

Modulation by simple definition is something that changes something else. In synthesis it is used to describe any module that produces a control signal that changes in time.

### ENVELOPE

The envelope is an ever present modulation in synthesis and allows you to easily emulate the sound produced by real world instruments such as pianos, organs etc, where the onset of a note is fast and increases to a peak level before falling off and then decreasing in volume until silent. Like all of Circle2's modulations, visual feedback is provided as a way of seeing the way in which the envelope is affecting the control it is connected to.

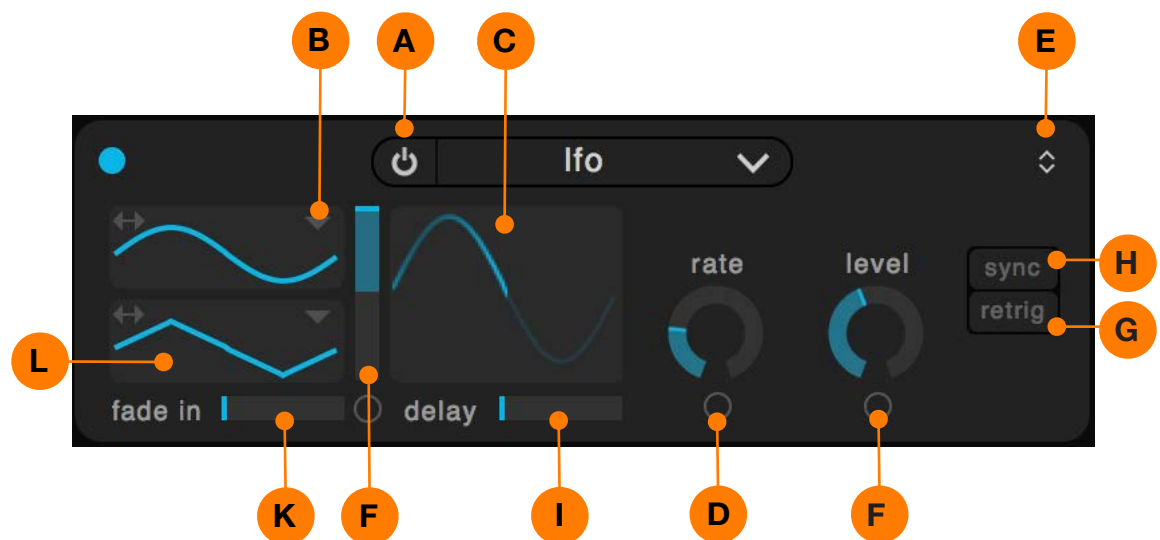


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Attack** is used to set the time it takes for the envelope to reach its peak value.
- C** **Decay** is used to the amount of time the envelope takes to reach its sustain level.
- D** **Sustain Level** is the level that the envelope rests at after it has passed through the attack and decay stages. The envelope stays at this level until the current note you have pressed on the keyboard is released.

- E** **Release Time** is used to set the amount of time it takes for the envelope to go from the sustain level to zero after you release the currently playing note.
- F** **Snap**, this allows you to go from an exponential like envelope to a straight line. Exponential like envelope are synonymous with analog synthesizers and give a thump to bass sounds, when used in conduction with fast/short attack times.

## LFO

The LFO or low frequency oscillator module is used as a way of adding slow but repeating modulations to a control or parameter. It has many uses from adding interest to a pad sound to vibrato pitch changes when connected to an oscillator's coarse tune.

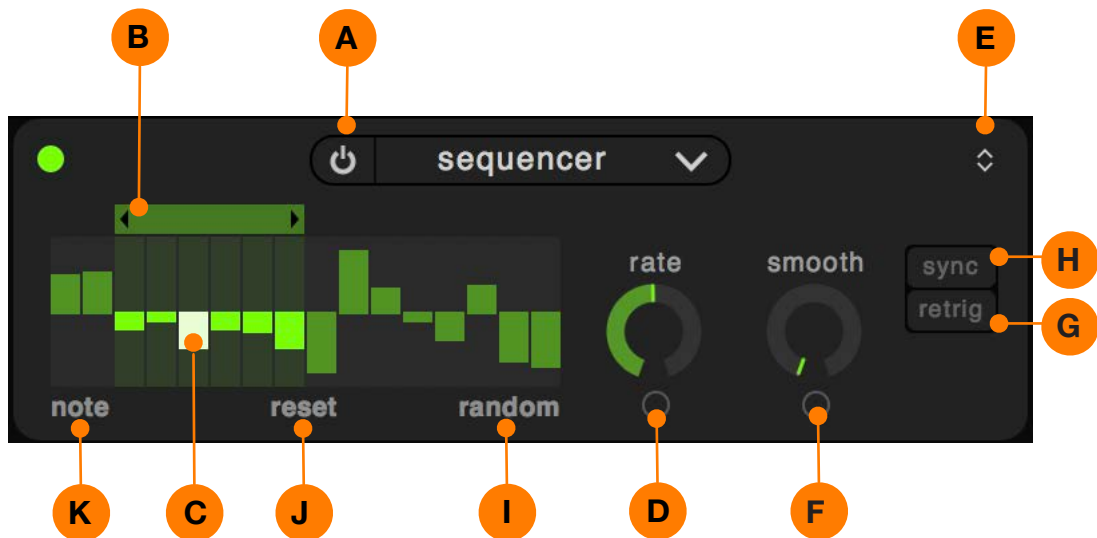


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **LFO Wave Selector**, click the arrow and you are presented the waveform selection window. Just click on a desired waveform.
- C** **Morph LFO Feedback Window** gives you a view of the shape of the current LFO that is being outputted with live feedback of the position of the LFO.

- D** **Rate** is used to set how fast the LFO is. When sync is turned on, the available values are fractions of Circle<sup>2</sup>'s BPM, otherwise the speed is set in hertz or how many times the LFO repeats its shape in one second.
- E** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- F** **Level**, is used to set the level or height of the LFO output. Attach the mod wheel CC and assign the LFO output to the oscillator coarse tune for vibrato effects.
- G** **Retrig**, or retrigger, when set to on, each new note you play will reset the LFO to its start position.
- H** **Sync**, when set to on, the rate becomes tied to Circle<sup>2</sup>'s BPM setting and you can set the LFO to be fractions of the BPM.
- I** **Delay**, is used to set the amount of time after a new note that it takes the LFO to start.
- J** **LFO Morph Slider**, is used to morph between the upper and lower LFO wave shapes.
- K** **Fade In**, is used to set the amount of time it takes for the LFO to fade in. The fade in happens after the LFO delay.
- L** **LFO Wave Feedback Window**, shows you the current LFO shape, you can also slide the window back and forth to add a phase shift.

## SEQUENCER

Circle<sup>2</sup>'s sequencer is a 16 step modulation source, similar to that of the LFO, but with steps that you can set the level of. Visual feedback of the current step that is playing is given by lighting up the step.



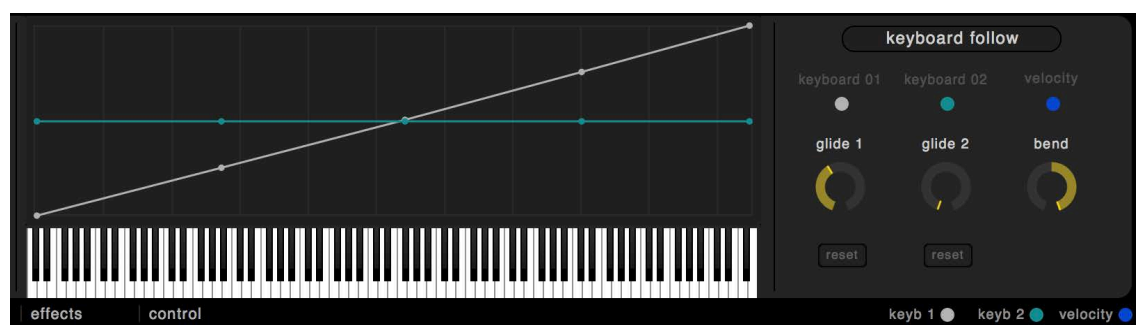
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Loop Selector**, is used to set the sequencer loop start and end points. When running, the sequencer will stay within these boundaries.
- C** **Step Level**, there are 16 of these steps and each can be set to continuous range of +/- 1. When the "note" button is selected, the steps have a range of +/- 12 semitones in 1 semitone increments.
- D** **Rate** is used to set how fast the sequencer is. When sync is turned on, the available values are fractions of the BPM, otherwise the speed is set in hertz or how many times the Sequencer repeats its steps in one second.
- E** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- F** **Smooth**, is used to smooth the sequencer. This removes the corners of the steps and gives a smooth transition from one step to the next.
- G** **Retrig**, or retrigger, when set to on, each new note you play will reset the sequencer to its start position.

- H** **Sync**, when set to on, the rate becomes tied to Circle<sup>2</sup>'s BPM setting and you can set the Sequencer to be fractions of the BPM.
- I** **Random** is used to randomize the current sequence.
- J** **Reset** is used to set all the steps back to 0, a straight line, which makes it easier for starting a new sequence from scratch.
- K** **Note**, when turned on, makes the steps go from a continuous +/- 1 range to a stepped +/- 12 semitone range.

### THE KEYBOARD FOLLOW

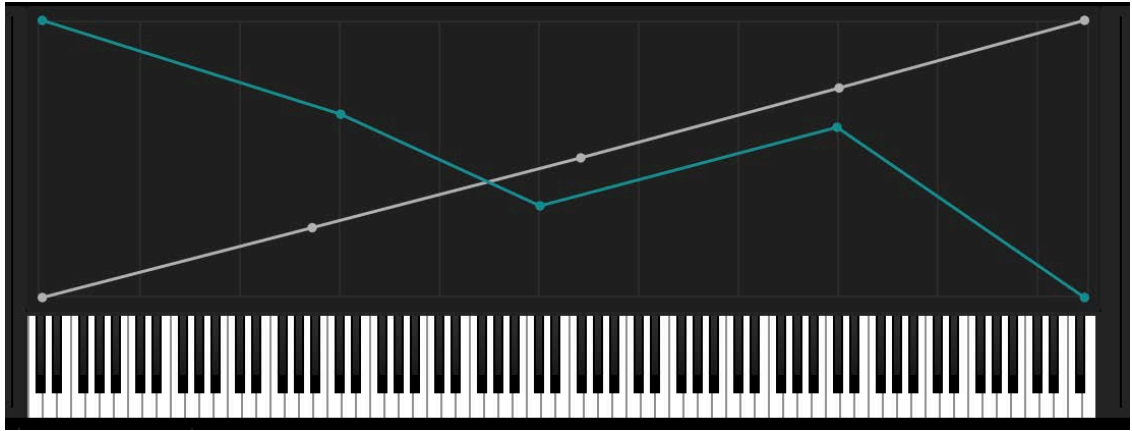
While not strictly a module, the keyboard follow is a modulation source and has output modulation circles, which can be found on the bottom panel in the far right corner. The keyboard follow is the modulation source you should connect up if you want a module parameter to track or follow the notes you play on the keyboard. For example, if you want Circle<sup>2</sup>'s oscillators to play notes, you need to connect up one of the keyboard follow modulations to the the oscillators coarse tune. The keyboard follow's default settings mean that you can just connect up keyboard follow to the oscillators, using the grey modulation output dot on the bottom pane marked "keyb 1" and the oscillator will track the keyboard without any further settings.

If you want to do more interesting things, like have the filter frequency decrease as you play up the keyboard, then you need to adjust the keyboard follow graph, accessible via the "keyboard" button on the bottom panel.



On this graph, you can see that the grey line, which is keyboard follow 1, increases linearly as you move left to right up the keyboard. This is the standard way in which the keyboard follow should work and is the type of curve you need for an oscillator to follow the keyboard and for it to play the correct notes. If however, you want a module not to follow the keyboard in the normal way as

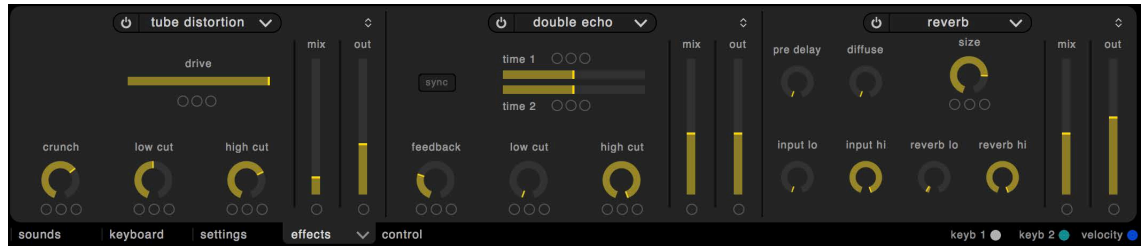
you move up the keyboard, then connect up keyboard follow 2 to the parameter and adjust the corresponding light blue curve as shown below.



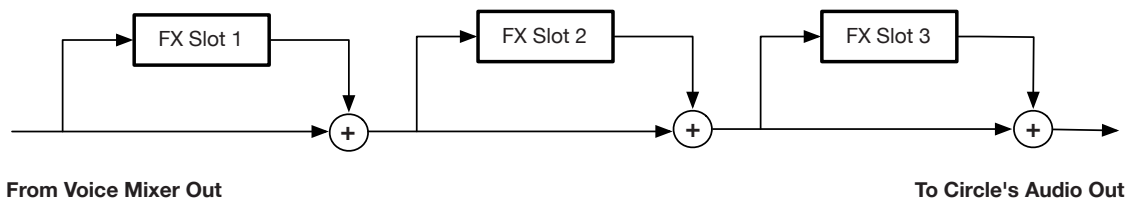
The parameter will now follow the blue curve and decrease, increase and decrease as you play up the keyboard. To reset the keyboard follow to their default value, just click their corresponding reset button. The glide controls are used to set the length of time it take the keyboard to move to the next note. Again, experimentation is the best way to learn and we recommend attaching the keyboard follows to different parameters, changing the curves and listening to what happens.

## MASTER EFFECTS

After you designed your sounds on the main panel, you can add effects to the sounds coming from the voices. These are applied to a mix of all the voices and are so called master effects. Also you can attach modulation to the most important parameters, for example, attaching an envelope to a master effect delay time.



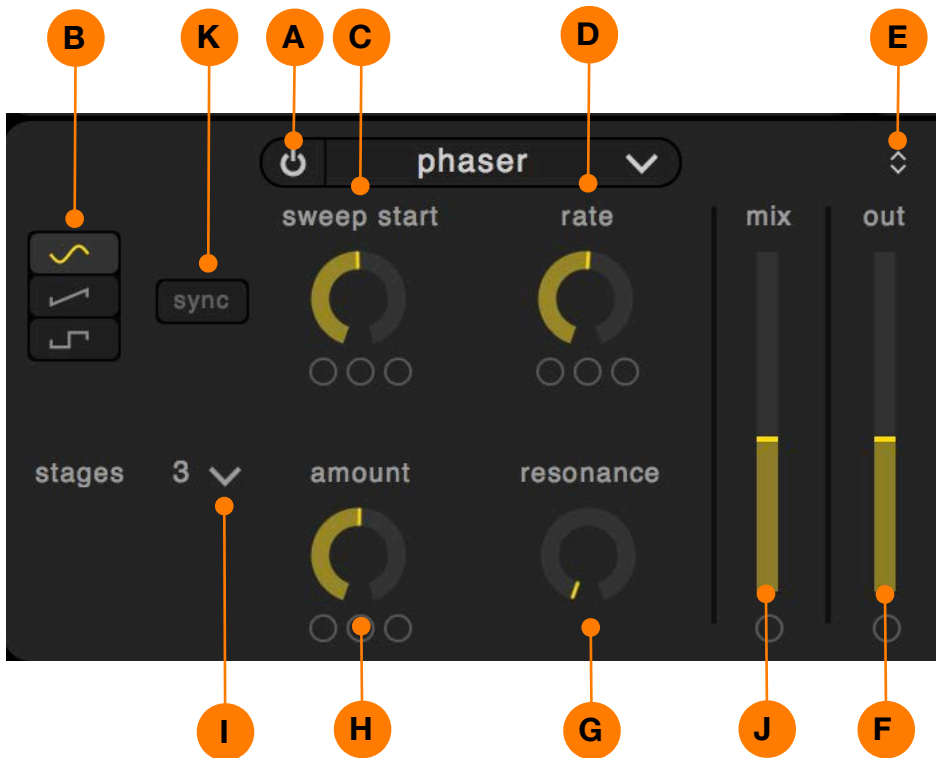
The three master effects slots, where you can choose the effects.



Above is a diagram of the audio flow through the master effects. The sound produced by the modules in Circle2's voice are mixed together and then passed through each of the master effects.

## PHASER

The phaser master effects module is similar to the voices phaser filter, but with an internal LFO that modulates the phasers frequency to give the traditional time varying phasing effect.

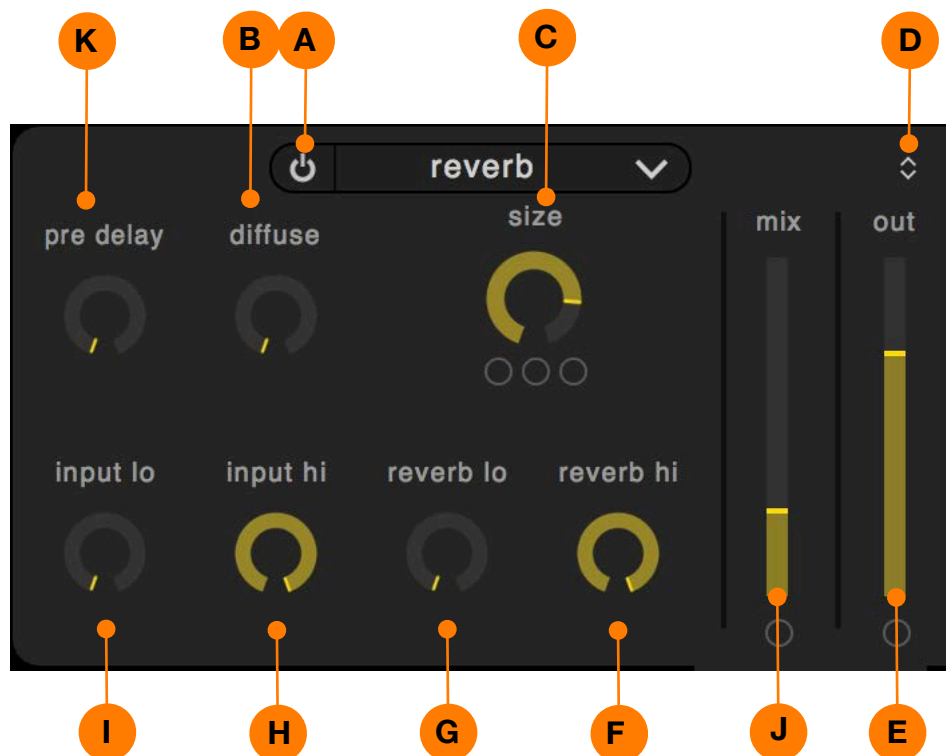


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **LFO Shape**, is used to set the shape of the phasers internal LFO that modulates the phaser frequency during a sweep.
- C** **Sweep Start** is used set the start point for the phaser to being its sweep in frequency from.
- D** **Rate**, is used to set the rate of the phaser internal sweep LFO. When sync is turned on, its a multiple of the BPM.
- E** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- F** **Output Volume**, this slider allows you to set the level of the signal that returns from the phaser.

- G** **Resonance**, similar to that of the analog filter provides a way of adding interest to the sound by resonating at the current frequency that the phaser filter is set to
- H** **Amount** is used to set the amount that the internal LFO sweeps the phaser filters frequency.
- I** **Num. Stages**, lets you set the number of stages in your phaser. A single stage gives a 90 degree phase shift at the phaser frequency.
- J** **Mix** is used to set how much of the input audio is sent into the phaser effect. When set to full position, you only hear the effect.
- K** **Sync**, when turned on means that the internal sweep LFO can be synced to the host (the program you are running Circle<sup>2</sup> as a plug-in inside) BPM.

## REVERB

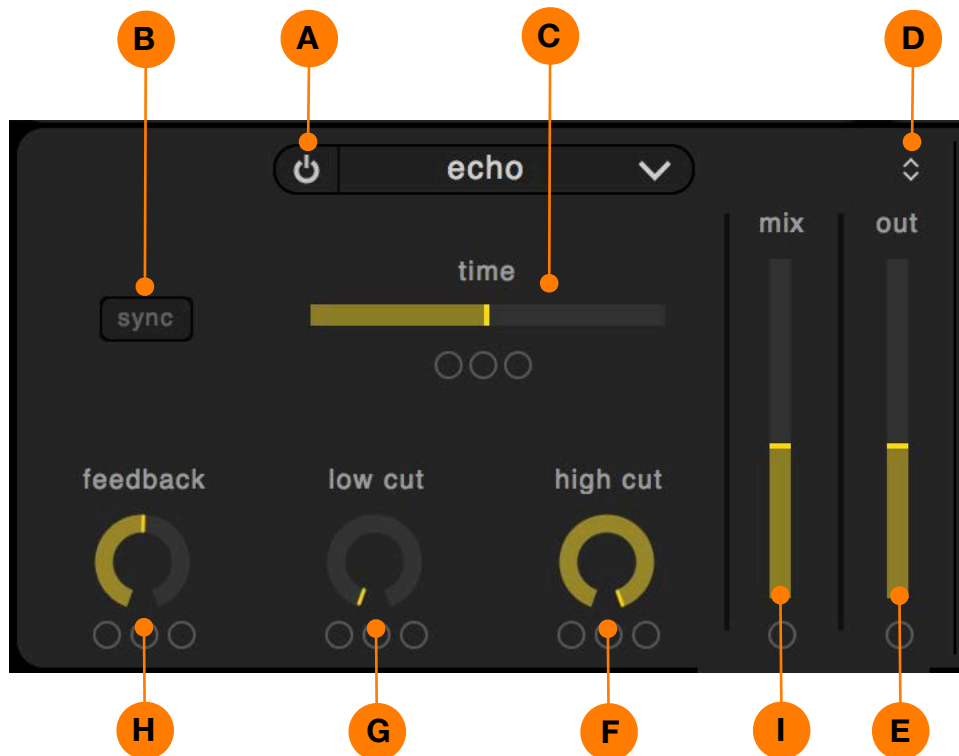
A reverb is an effect that is used to give an impression that the sound is in real space or room. Circle<sup>2</sup>'s reverb is broken into two sections, the input and reverb tank, each with their own filter section.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Early Echo**, sets the level of the distinct echos that you hear at the start of a reverb. This is tied into the size control: increasing size moves the early echos to take longer to return.
- C** **Size** is used set the length of time it takes for the reverb to decay and go silent.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the phaser.
- F** **Reverb High** is used to control the reverb tanks low pass filter, use this is you want to make the reverb tail darker.
- G** **Reverb Low** is used to control the reverb tanks high pass filter, use this is you want to make the reverb tail darker.
- H** **Input High** is used to control the reverb's input low pass filter, use this is you want to make the reverb input and early echo's darker.
- I** **Input Low** is used to set how much of the input audio is sent into the mouth filter. When set to full position, you only hear the effect.
- J** **Mix** is used to set how much of the input audio is sent into the reverb effect. When set to full position, you only hear the effect.
- K** **Pre Delay** is used to set a small delay time before the reverb starts.

## ECHO

The echo master effect is a stereo echo, with a single control for the time.

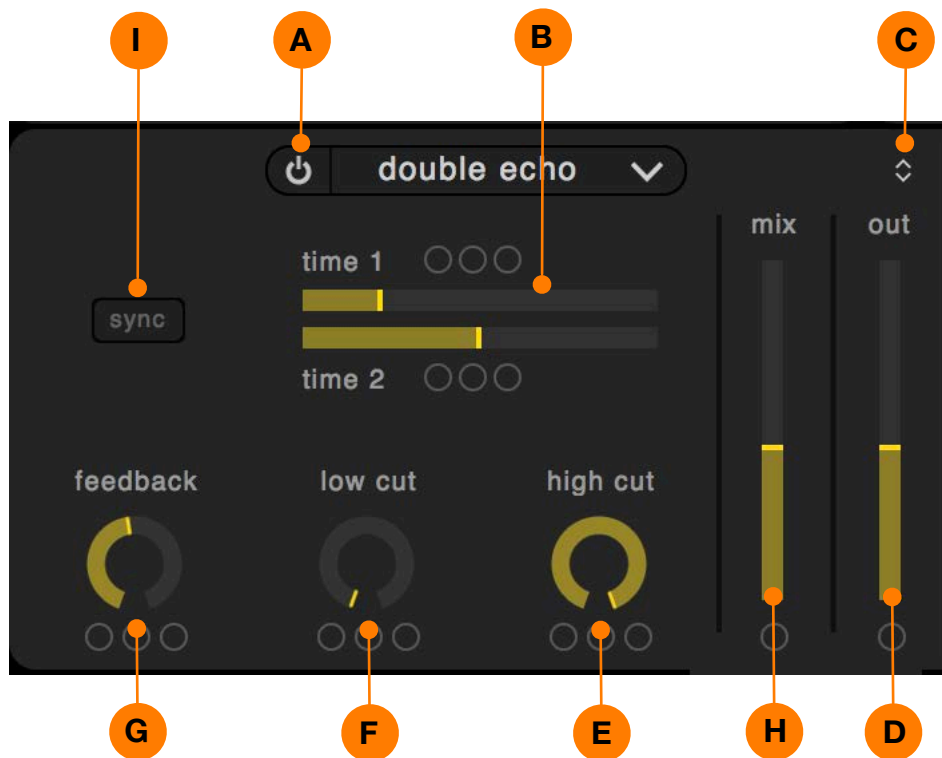


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Sync**, again when turned on allows you to set the delay time as a fraction of Circle<sup>2</sup>'s BPM.
- C** **Time**, is used set the echo's delay time.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the delay.
- F** **High Cut** is used to control the echo's low pass filter. Use this if you want to make the echo repeats darker.
- G** **Low Cut** is used to echo's internal high pass filter. Use this control if you want to thin out the echo sound, by removing bass frequencies.

- H** **Feedback** controls how much of the echo output is fed back into the input. High values mean the echo repeats more.
- I** **Mix** is used to set how much of the input audio is sent into the delay. When set to full position, you only hear the effect.

## DOUBLE ECHO

The double echo is functionally the same as the echo effect, just with separate time controls for the two stereo channels.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Time 1 & 2** is used set the two stereo channel's echo delay time.
- C** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- D** **Output Volume**, this slider allows you to set the level of the signal that returns from the delay.

- E** **High Cut** is used to control the echo's low pass filter. Use this if you want to make the echo repeats darker.
- F** **Low Cut** is used to echo's internal high pass filter. Use this control if you want to thin out the echo sound, by removing bass frequencies.
- G** **Feedback** controls how much of the echo output is fed back into the input. High values mean the echo repeats more.
- H** **Mix** is used to set how much of the input audio is sent into the delay. When set to full position, you only hear the effect.
- I** **Sync**, again when turned on allows you to set the delay time as a fraction of Circle<sup>2</sup>'s BPM.

### PING PONG ECHO

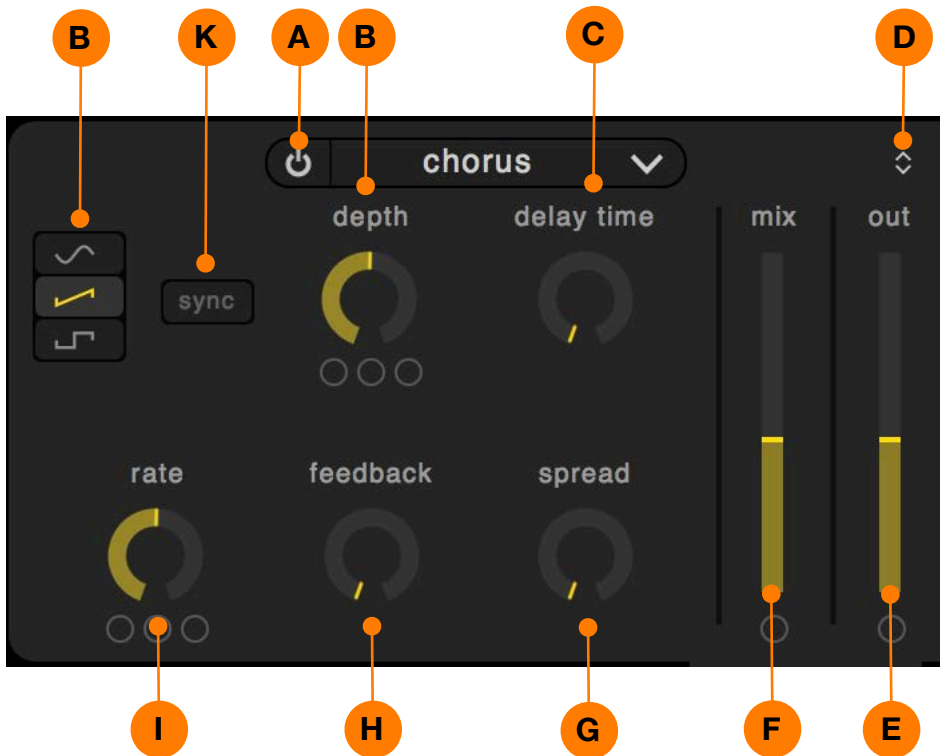
The ping pong echo is used to have the delay sound bounce back and forth from the left and right channels.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Ping Pong Time** is used set the two stereo channel's echo delay time.
- C** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- D** **Output Volume**, this slider allows you to set the level of the signal that returns from the delay.
- E** **High Cut** is used to control the echo's low pass filter. Use this if you want to make the echo repeats darker.
- F** **Low Cut** is used to echo's internal high pass filter. Use this control if you want to thin out the echo sound, by removing bass frequencies.
- G** **Feedback** controls how much of the echo output is fed back into the input. High values mean the echo repeats more.
- H** **Mix** is used to set how much of the input audio is sent into the delay. When set to full position, you only hear the effect.
- I** **Sync**, again when turned on allows you to set the delay time as a fraction of Circle<sup>2</sup>'s BPM.

## CHORUS

Like a chorus is a group of singers, the chorus effect is used to make a single instrument sound like there are more being played.

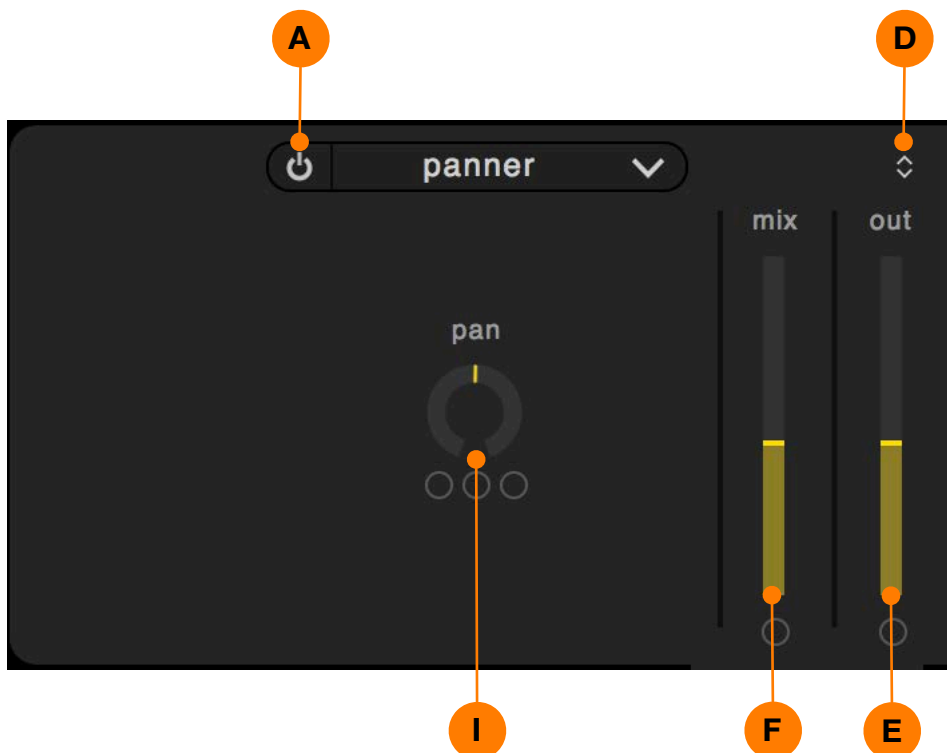


- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Depth** is used to set the amount that the chorus's internal LFO's will modulate the delay time.
- C** **Delay Time** is used to set the starting point in the delay line from which the internal LFO will start to modulate the delay time.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the phaser.
- F** **Spread** is used to spread out the LFO's in both rate and where they are modulating the delay time.
- G** **Feedback** is used to control how much of the delay line output is looped back in around.

- H** **Rate** is used to set the speed of the internal LFO's.
- I** **Mix** is used to set how much of the input audio is sent into the chorus. When set to full position, you only hear the effect.
- J** **Sync** when turned on means that the internal sweep LFO can be synced to the host BPM, with the knob allowing you to set the rate as a fraction of the BPM.
- K** **LFO Shape**, this drop menu allows you to select the shape of the choruses internal modulation LFO.

## PANNER

The panner is a simple module that allows you to move the sound from the left to the right stereo channel.



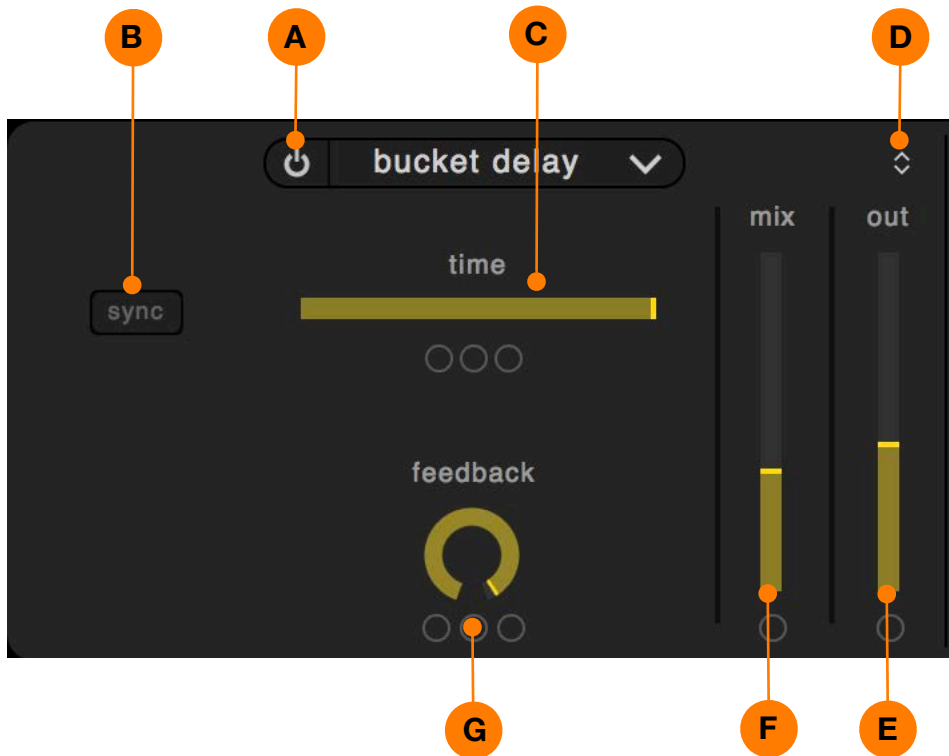
- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Pan** is the control you use to set the level of the right and left channels. Fully left, you will hear only the left channel, fully right, only the right channel.
- C** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- D** **Output Volume**, this slider allows you to set the level of the signal that returns from the panner.
- E** **Mix** is used to set how much of the input audio is sent into the mouth filter. When set to full position, you only hear the effect.

**TIP** 

*Assign an LFO to the panner's pan control for left to right panning effects.*

## BUCKET DELAY

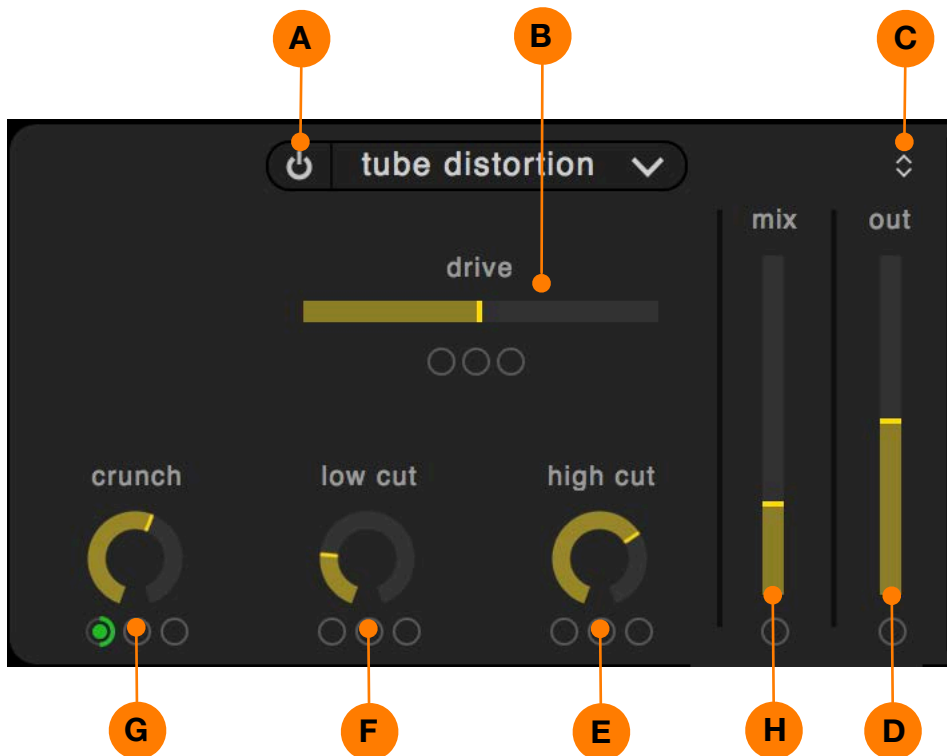
A warm, characteristically vintage sounding delay, inspired by the analogue bucket-brigade delay that was prevalent in the 1970s and 1980s.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Sync**, again when turned on allows you to set the delay time as a fraction of Circle<sup>2</sup>'s BPM.
- C** **Time**, is used set the echo's delay time.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **Output Volume**, this slider allows you to set the level of the signal that returns from the delay.
- F** **Mix** is used to set how much of the input audio is sent into the delay. When set to full position, you only hear the effect.
- G** **Feedback** controls how much of the delay output is fed back into the input. High values mean the echo repeats more.

## TUBE DISTORTION

An effect which you can use to add some vintage style tube distortion to your sounds. The drive slider sets the amount, and the crunch affects the intensity of the distortion applied.



- A** **Module On/Off**, used to turn the module on and off as needed. Setting to off means that the module is bypassed.
- B** **Drive**, used to apply more distortion to the incoming signal.
- D** **Snap Shot Menu**, use this menu if you want to save a snap shot of your settings.
- E** **High Cut** controls the low pass filter on the distorted signal. Use if you want to make the distortion darker.
- F** **Low Cut** controls the high pass filter on the distorted signal. Use if you want to thin out the distortion, by removing bass frequencies.
- G** **Crunch** is used to set the intensity of the distorted signal. Using this Applies more high frequency content to the output signal.
- H** **Mix** is used to set how much of the input audio is sent into the distortion. When set to full position, you only hear the effect.

# 5

## Circle<sup>2</sup>'s Settings

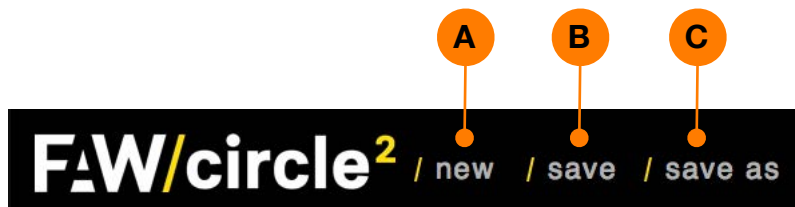
The bottom panel is where more advanced and less used features are stored, along with the master effects. The different settings and properties of Circle<sup>2</sup> are grouped together on different panes, selectable by the buttons on the bottom panel.

## MANAGING SOUNDS IN CIRCLE<sup>2</sup>

Circle<sup>2</sup> has many features that can be used to very useful for the easy management of your sounds. Sounds are saved into folders called banks, a term generally used since the days of MIDI. On your hard disc, the banks and sounds are stored in /Application Support/FAW/Circle2 /Presets on the Mac and in Circle<sup>2</sup>'s main install directory on the PC (see "Installing Circle<sup>2</sup>").

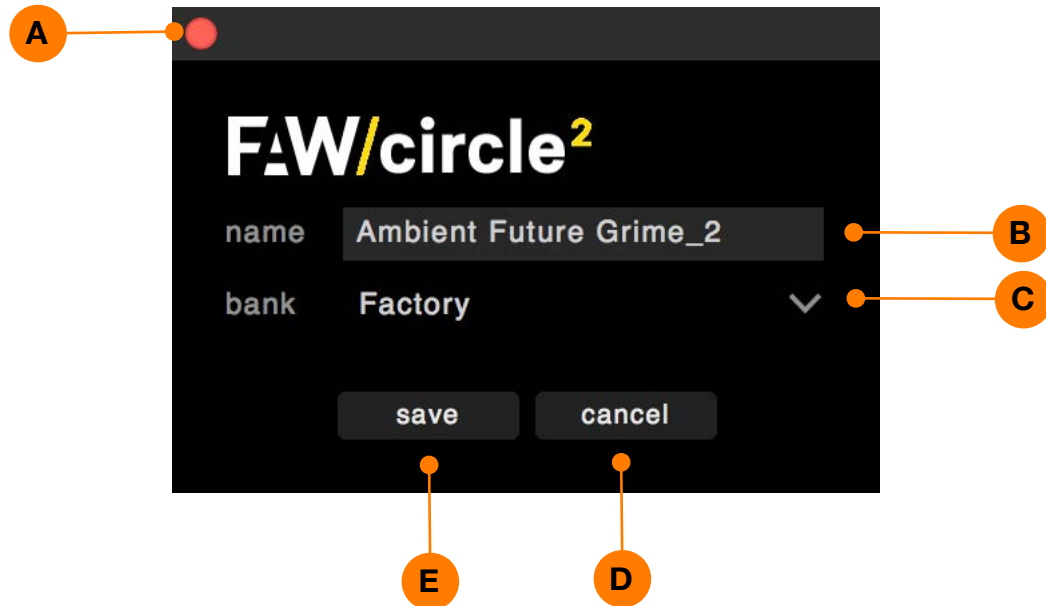
### SAVING SOUNDS

When you have created your own sound or made some changes to an existing one, you'll want to save your changes. In Circle<sup>2</sup> this is done using the three buttons on the top panel.



- A** **New** is used to create a new sound. The newly created preset will be a simple basic preset which you can use as a starting point.
- B** **Save** is used to save a sound. This overwrites the current sound with what ever changes you have made. If you don't want the current sound to be over written, use save as instead.
- C** **Save As**, clicking save as brings up a small window which allows you to give the sound a name and to set the bank in which it is stored.

When you click the save as button, the following window is opened, where you can name your sound and save it to a bank.

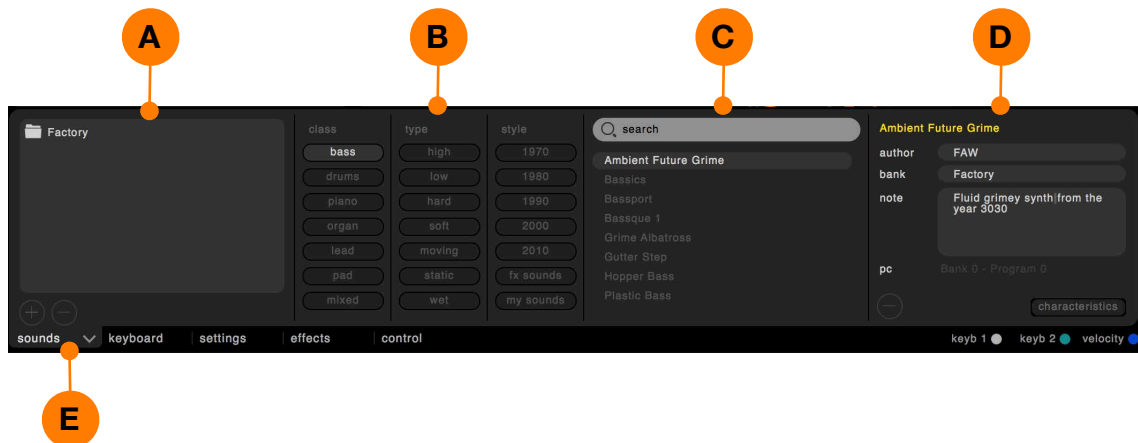


- A** **Close Window X** is used to close the save as window.
- B** **Name Text** entry box is where you type the name you would like to give to your preset. The default is the name of the current preset with a number appended to the end.
- C** **Bank** is the folder in Circle<sup>2</sup>'s install directory where the sound will be stored. Use the arrow to bring up a list of the banks that exist already.
- D** **Cancel** is a regular cancel button and is used to quit the save as process without any changes being made to your sound.
- E** **Save** is the button that completes the save as process and clicking saves the sound to the selected bank.

To manage sounds and group them into various banks, you use the sounds browser, which is accessed by clicking on the "Sounds" button on Circle<sup>2</sup>'s bottom panel. The next section presents the sound browser and introduces the different features and ways in which you can manage sounds in Circle<sup>2</sup>.

## MANAGING SOUNDS WITH THE PRESET MANAGER

The preset manager, located using the sounds button on the bottom panel is a way of managing, grouping and finding your sounds. This is useful when you start to have lots of sounds, and using the sound browser makes the somewhat unwieldily process of dealing with many sounds a lot simpler.



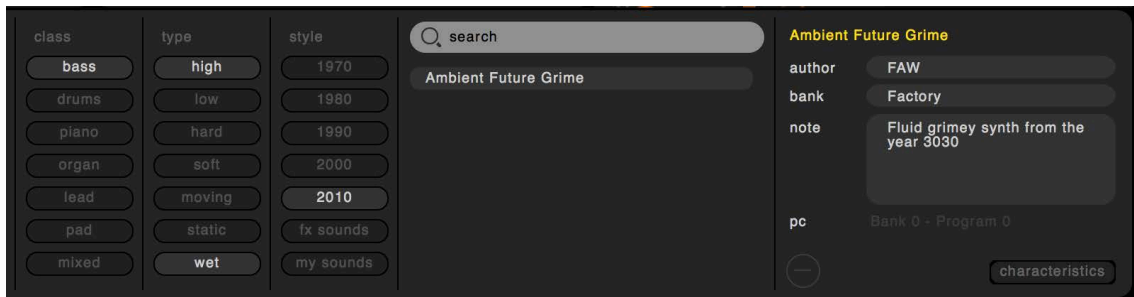
- A Banks**, this window shows all the banks that are available. Use the “+ add bank” to create a new bank and “x delete bank” to delete a bank.
- B Browser Filter** is used to filter the sounds that are returned in the preset search results window. For more info on using the filter see the next section.
- C Sound Search and Results Panel**, you can enter the partial name of the preset you would like to find and the result of the search in conjunction with the browser filter are listed in the window beneath.
- D Sound Info**, this section shows the name of the current preset, allows you to set a sound designer name to be associated and a simple note for some info about the sound.
- E Sounds Button**, this button is used to show the sounds browser window.

### NOTE

When you click the “x delete bank” button, all the presets in this bank are destroyed permanently. You’ll be presented with a warning window requiring confirmation first though. The same stands for “x delete preset”, in this case the currently loaded preset will be destroyed.

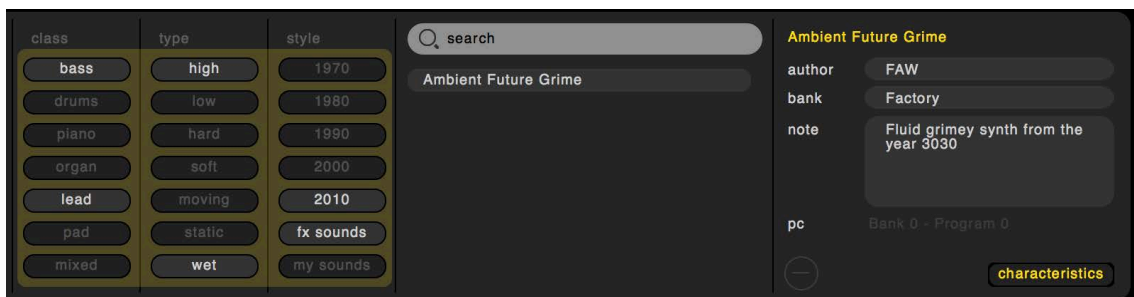
## USING THE PRESET MANAGER FILTER AND SEARCH

The sounds browser filter is an easy way to find sounds fast based on different criteria, for example if you need a lead sound that is soft and from the 1970s, just click the relevant buttons in the filter selection window and all sounds that match these criteria will be listed in the search results panel. As seen below clicking Lead, High, Soft and 1970 returns back a Funky Moog Lead sound.



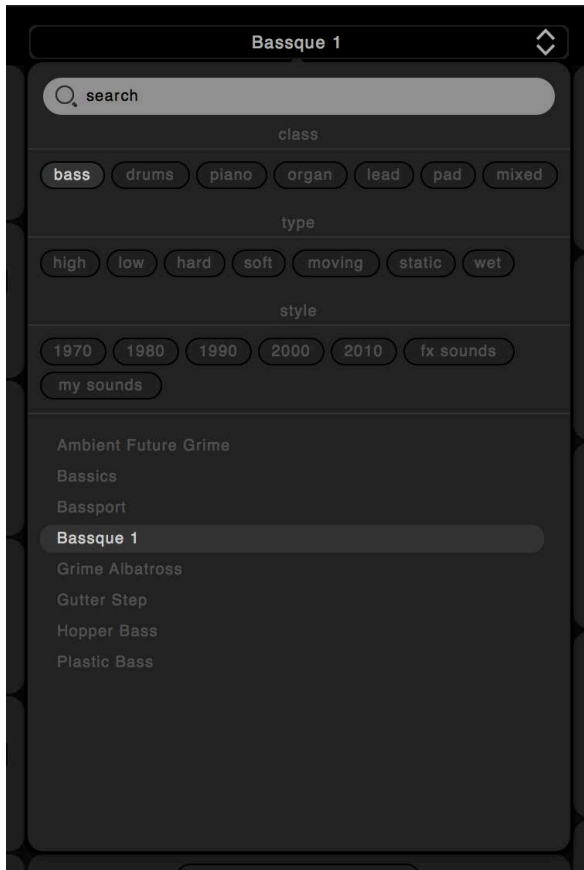
*Using the Sounds Browser filter, select your criteria and the results are returned.*

To set your own criteria, simply press the “characteristics” button and highlight the criteria you want to add to the sound. To finish, save your sound and you can now use the set criteria to re-find your sound at a future time.



*Setting your criteria, just click the “characteristics” button, select the criteria and save your sound.*

A further way of opening sounds in Circle<sup>2</sup> is to use the preset browser drop menu in Circle<sup>2</sup>'s top panel. This drop menu contains a tag cloud and text search box so you can easily locate the sounds you require. Although sounds are accessible here, all editing of characteristics and tags should be carried out in the bottom bar preset manager.



The preset browser on Circle<sup>2</sup>'s top panel.

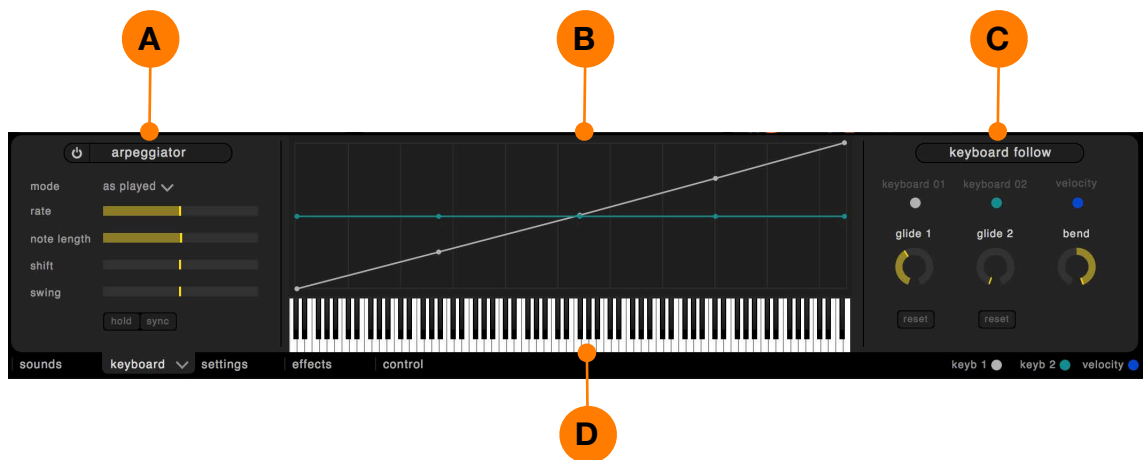
**TIP**

We have added a special search filter criteria to the browser called “My Sounds”. This is useful if you want to find all the sounds you have created. Just assign the “My Sounds” characteristic in the way outlined above, and when you want to find again, just click “My Sounds” and all sounds with this criteria will be returned.

## THE KEYBOARD TAB

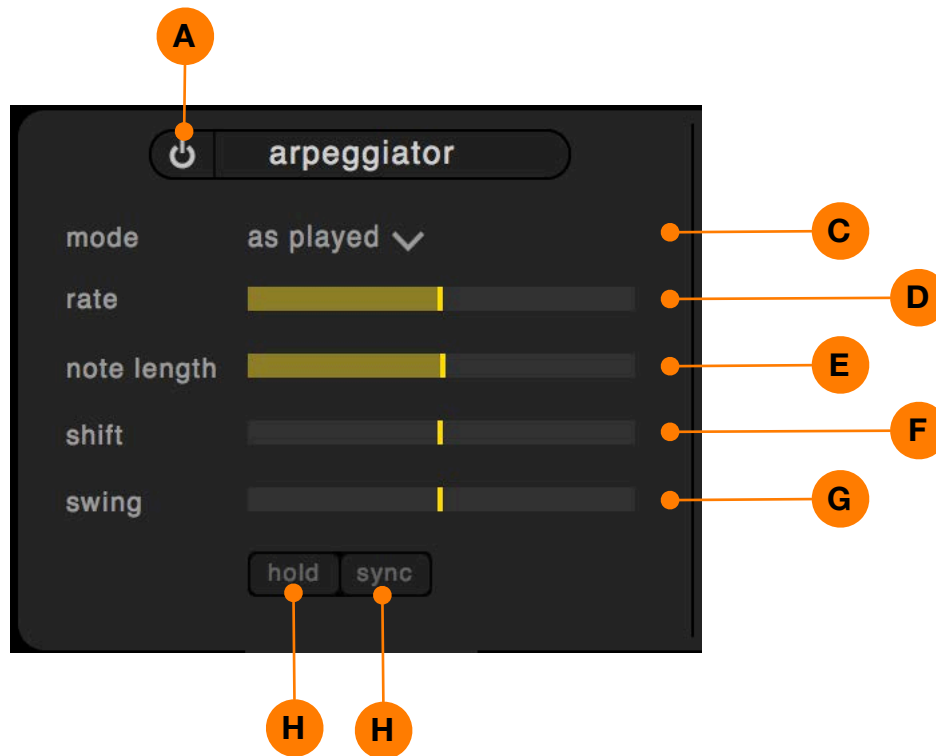
The keyboard tab is where everything related to notes and your keyboard are grouped. Its where you'll find the arpeggiator, and a virtual keyboard that you can play with the mouse and also more advanced ways to alter the way your keyboard is used with Circle<sup>2</sup>.

The keyboard bottom panel is broken into three sections, the arpeggiator, the keyboard and keyboard follow graph/settings pane. For more information on the keyboard follow and how to adjust the curves, see page 52.



- A** **Arpeggiator** is a automatic note generator, in a simple way it makes Circle play itself and is useful for generating interesting patterns.
- B** **Keyboard Follow Graph** is used to set the way the keyboard follow modulations work in relation to the keyboard.
- C** **Keyboard Follow Settings** is where you can set more advanced keyboard follow parameters.
- D** **Virtual Keyboard** is an on screen keyboard that you can be used to play Circle via your mouse.

## THE ARPEGGIATOR

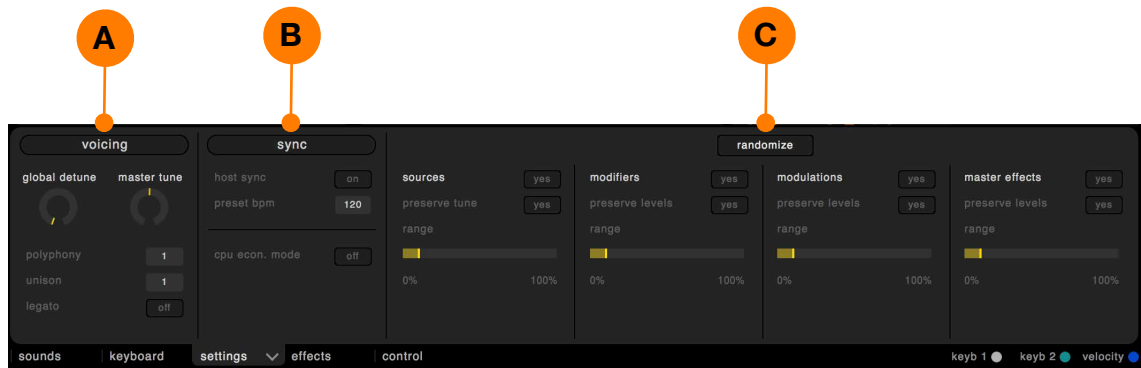


- A** **Arpeggiator On/Off**, used to turn the arpeggiator on and off as needed.
- B** **Sync**, like on the LFO and sequencer module, when turned on means that the rate at which the arpeggiator cycles through notes is a fraction of the Circle<sup>2</sup>'s BPM setting.
- C** **Mode** is used to set the way in which the arpeggiator cycles through the notes. “as played” means that it will cycle through the notes in the order that they are played, “up” means that it will cycle through the notes moving up the keyboard, “down” means that it will cycle through the notes down the keyboard and “up/down” is as you would think: an alternating up down.
- D** **Rate** is used to set the speed at which the arpeggiator moves from one note to the next. When sync is turn on this speed is a fraction of the BPM.
- E** **Note Length** is used to set the length of time the note is held and is a fraction of the rate. If rate is set to 1 Hz and note length is set to 0.5, then the note will be played for 0.5 seconds.

- F** **Shift** is used to set where the current arpeggiator pattern will move to on the keyboard, after it finishes its cycle. For example setting shift to 2 will mean that the pattern will play from the current held notes, then shift up an octave, cycle through the held notes and then up a further octave, before starting again back at the start.
- G** **Swing** is used to add some swing to the notes as they are cycled through. A positive swing means every second note is delayed, the amount of which is determined by the slider. Negative swing values means every second note is played a little late.
- H** **Hold** when turned on means that even if you release a note on the keyboard it will still be played by the arpeggiator. Turning off will remove all the unheld notes from the pattern.

## SETTINGS TAB

The setting tab on the bottom panel brings up the window where the more advanced settings related to Circle<sup>2</sup> are stored. It's here that you can adjust the main tune of Circle<sup>2</sup>, add some analog randomness via the global detune control or generate random sounds with the randomize function.



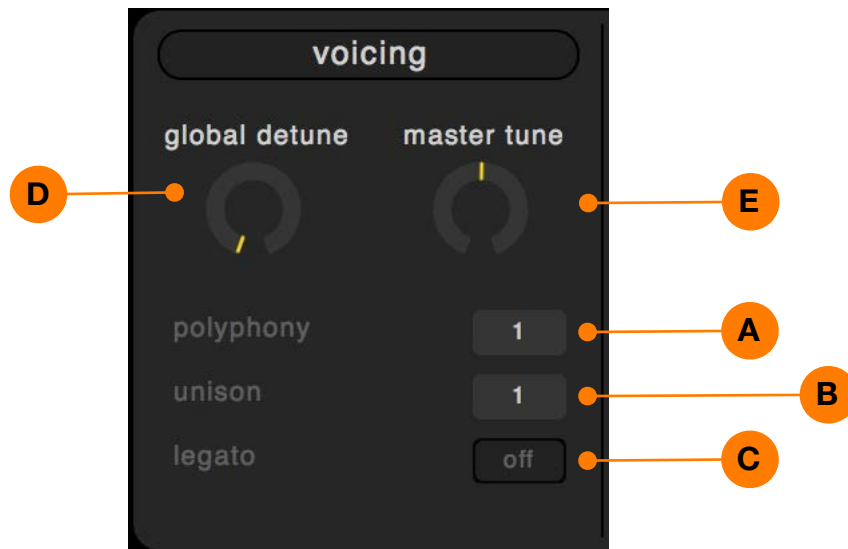
- A** **Voicing** is where you adjust the settings related to Circle<sup>2</sup>'s voices.
- B** **Sync** is used to set Circle<sup>2</sup>'s internal BPM.
- C** **Randomize** is where you press the randomize button and a new sound is created based on the settings provided.

### TIP

*Randomize works while you play the keyboard, so a good tip is to hold a note while repeatedly pressing randomize: when you find a good new sound just save it.*

## VOICING

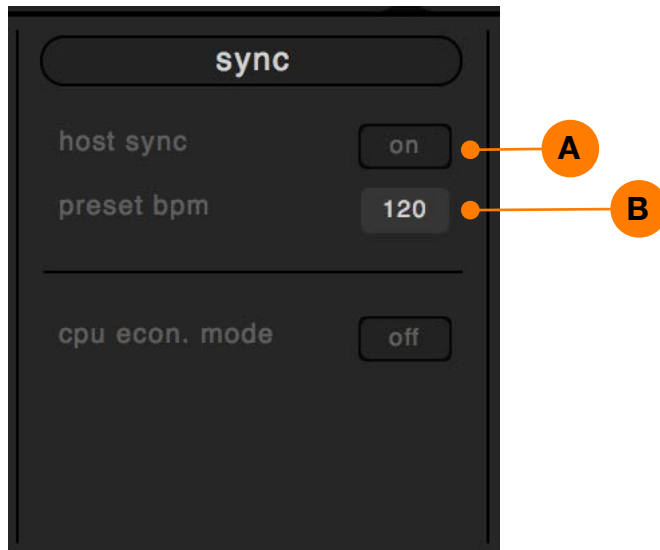
As explained earlier, a voice is similar to a single voice in a choir, and it is a single voice that produces each note when you play Circle<sup>2</sup>'s keyboard. Each voice has its own oscillators, filters etc, and the voicing panel is where you can make settings to the way Circle<sup>2</sup> handles these voices.



- A** **Polyphony**, this is the number of notes or voices Circle<sup>2</sup> can play at any given time.
- B** **Unison**, again related to choirs, where voices sing/play the same note. For example, setting this value to 3 means that Circle<sup>2</sup> will play 3 voices when you press a key on the keyboard.
- C** **Legato On/Off**, is a setting for when Circle<sup>2</sup> has only one voice polyphony or the unison value is the same as max polyphony. All it means is that when on and you play a new note while still holding another, the envelope and modulations are re-triggered.
- D** **Global Detune**, is used to add randomness and a small amount of variation in pitch between the voices. This is to emulate the behavior of analog synthesizers. It is also useful when using unison, as the sound thickens out because the voices are no longer in perfect tune with each other.
- E** **Master Tune**, this allows you to tune Circle<sup>2</sup> to another instrument, in the range of +/- 12 semitones.

## SYNC

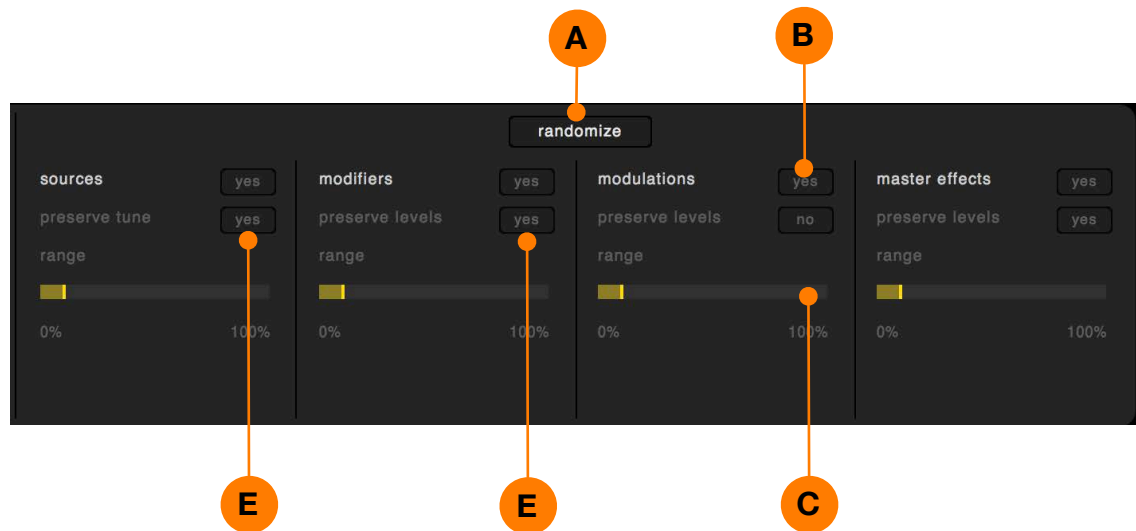
The sync pane of the settings window allows you to the settings for Circle<sup>2</sup>'s BPM. What ever the BPM is set to in this window is what will be used as the value for any modules that can be synced, such as the LFO, sequencer, arpeggiator and master effects.



- A** **Host Sync**, setting to on means that Circle<sup>2</sup> will ignore the per preset BPM setting and will use the hosts applications BPM instead.
- B** **Preset BPM**, this is the BPM value that is used by Circle<sup>2</sup> when host sync is turned off.

## RANDOMIZE

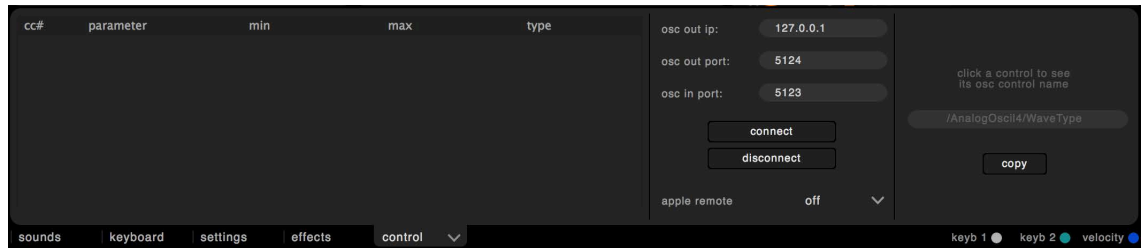
Randomize is a handy function for coming up with sounds that you may not have thought of before: simply click the randomize button and Circle<sup>2</sup>'s settings will change automatically.



- A** **Randomize** is the button you press when you want to randomize Circle<sup>2</sup> current settings.
- B** **Yes/No Toggle**, when set to yes means that the associated class of module is included in randomization.
- C** **Preserve Levels**, when turned on means that the levels or volumes are excluded from the randomization.
- D** **Range** is used to set how the new randomized settings will deviate from the current settings.
- E** **Preserve Tune**, when turned on means that the oscillators will be excluded from the randomization. This is useful if you want to preserve the pitch of the oscillators so that they stay in tune.

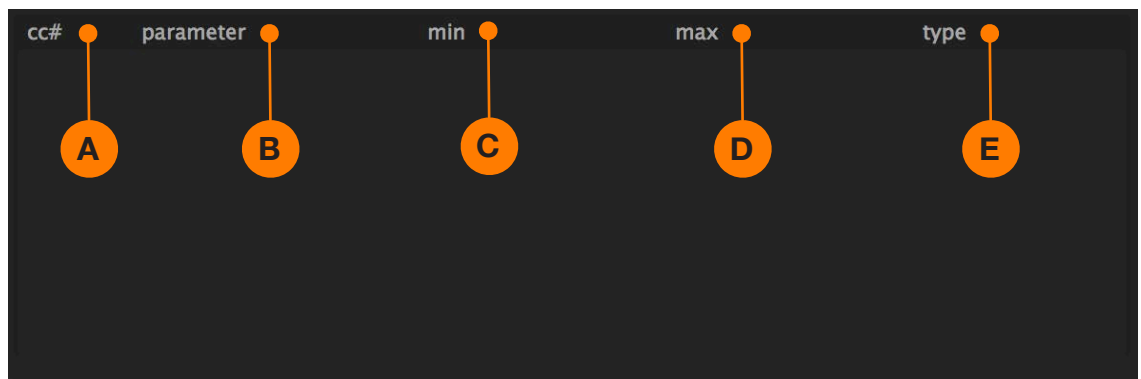
## CONTROL TAB

The control tab is where the settings related to controlling Circle<sup>2</sup> using hardware controllers, such as MIDI controllers or OSC enabled touch screens, are available.



The control tab, which is used for setting MIDI and OSC controllers.

## MIDI CONTROLLER SETTINGS PANE

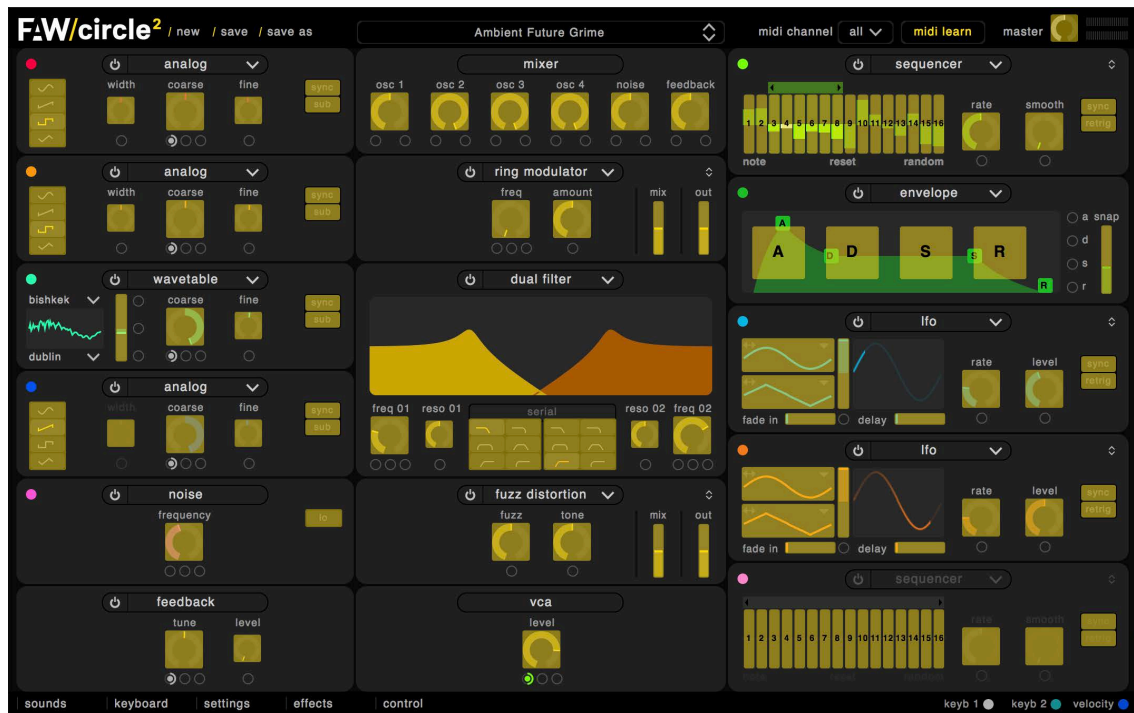


- A** **CC**, this is the MIDI cc number that is assigned to the Circle<sup>2</sup> parameter.
- B** **Parameter**, this displays the parameter that the MIDI controller CC is assigned to.
- C** **Min**, sets the minimum value that the MIDI controller can set the assigned parameter to.
- D** **Max**, sets the maximum value that the MIDI controller can set the assigned parameter to.
- E** **Type** is used to set whether the current mapping is applied to the current sound or applied to all sounds in Circle<sup>2</sup>.

## CONTROLLING CIRCLE<sup>2</sup>

### ASSIGNING A MIDI CONTROLLER

Assigning a MIDI controller to any of Circle<sup>2</sup>'s parameters is very simple, just follow these steps.

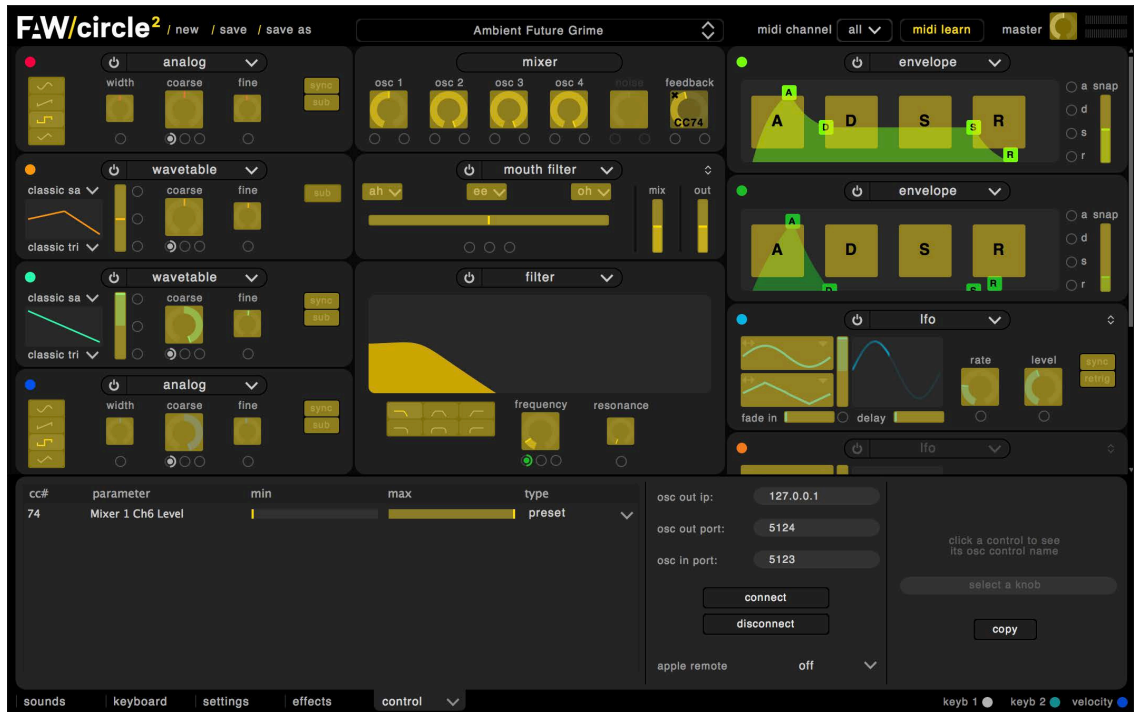


*Circle<sup>2</sup>'s main panel when in MIDI Learn Mode*

1. Click the MIDI Learn button on Circle<sup>2</sup>'s top panel to enter MIDI Learn mode. All assignable controls become highlighted in yellow.
2. Click on the highlighted parameter that you would like to assign a controller to. The yellow highlighting will now start to fade in and out.
3. On your MIDI controller, twist the desired controller knob that you want to assign. The assignment will now be made and a corresponding entry will be made in the MIDI controller settings pane.
4. You can then set the min and max range of the controller using the min and max sliders for that CC entry. To remove the assignment, click on the “x” that is displayed on the parameter MIDI learn mode highlighting on the knob or highlight the entry on the MIDI controller settings pane and type back-space.

**NOTE**

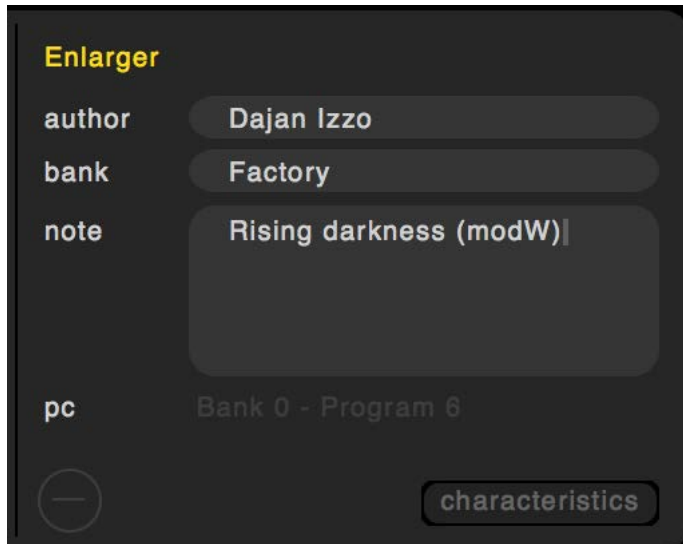
If you want the MIDI controller assignment to be applied to all presets, select *global* from the type drop menu, for the assignment to only be the current preset select *select preset*.



Having assigned the controller a controller, an associated entry appears in the MIDI controller settings pane.

## LOADING SOUNDS BY MIDI PROGRAM CHANGE

Circle<sup>2</sup> can respond to MIDI program change messages, which means a host program or external sequencer can open a sound. First, check the bank and program number in the sound browser window, denoted PC in the sounds description.

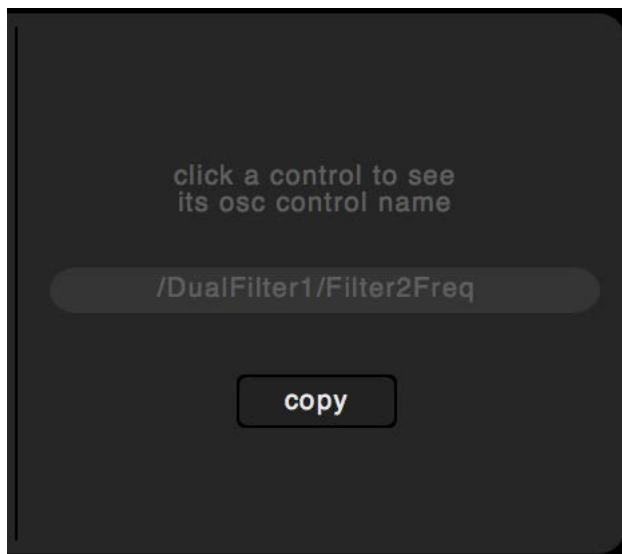


In this example case, the preset is in bank 0 and its program number is 6. You first have to select the current bank in Circle<sup>2</sup> by sending a CC#0 with the value 0 to select the bank 0 as a current bank. Then send a MIDI Program Change with the value 6 to open the preset.

## CONTROLLING CIRCLE<sup>2</sup> USING OSC

*(Mac OSX version only)*

OSC or open sound control is a protocol for controlling musical instruments and can operate over a network. Circle<sup>2</sup> is OSC enabled, making it easy to integrate control surfaces like the Lemur with Circle<sup>2</sup>. OSC is based on the idea that each parameter has an address, like a web page. To find a control's address in Circle<sup>2</sup>, simply click the knob or button and its address is displayed in the OSC address pane of the bottom panel control window.

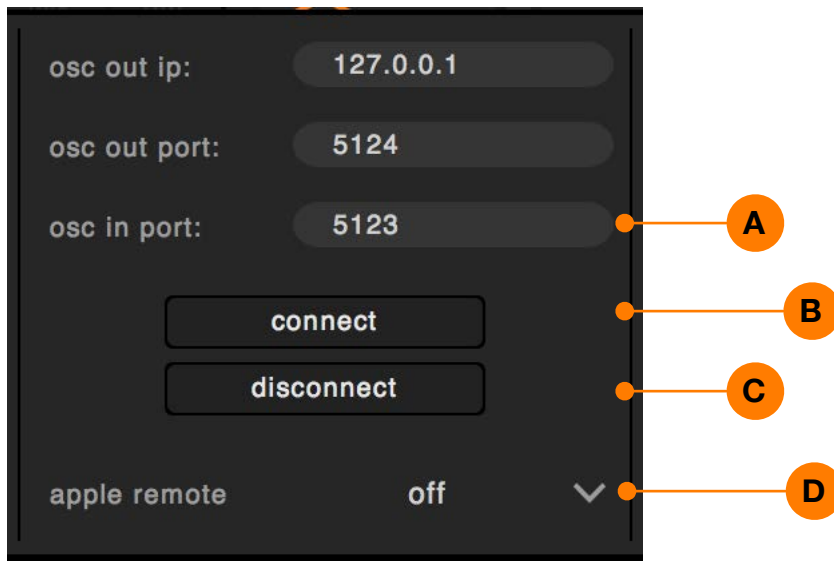


*The OSC address of a control*

A copy button is provided so that you can easily copy Circle<sup>2</sup>'s control address into an OSC enabled controller.

As OSC is a networked control protocol, Circle<sup>2</sup> has a small network server inside so that it can receive the incoming messages. To enable the server, type into the OSC port text box the name of the port that your control surface is sending its messages on and click connect. Circle<sup>2</sup> will now listen and respond to any messages it receives on this port.

To disable OSC in Circle<sup>2</sup>, simply click disconnect.



- A** **OSC Port**, is where you type the address of the UDP port that you would like Circle<sup>2</sup> to listen for incoming OSC messages on.
- B** **Connect**, is used to enable Circle<sup>2</sup> to listen for messages on the port that is set in the OSC Port text field. Once connected the number of the port is written on the connect button.
- C** **Disconnect** is used to disconnect Circle<sup>2</sup> from listening to its currently enabled OSC port.
- D** **Apple Remote**, is the drop menu used for turning on Circle<sup>2</sup>'s Apple Remote support.

## USING AN APPLE REMOTE TO CHANGE SOUNDS

*(Mac OSX version only)*

If you have an Apple Mac computer with an Apple Remote Control, you can use it to change Circle<sup>2</sup>'s currently loaded sound from afar. This can be useful in situations where your keyboard is far away from the computer running Circle<sup>2</sup>.

To enable Apple Remote support, simply select exclusive or on from the Apple Remote drop menu. Choose exclusive if you want Circle<sup>2</sup> to capture all the Apple Remote commands and choose on if you want to be able to use volume to control a different program.

To change sounds with your Apple Remote simply use the fast forward button to move onto the next sound and the rewind button to go back to the previous sound.

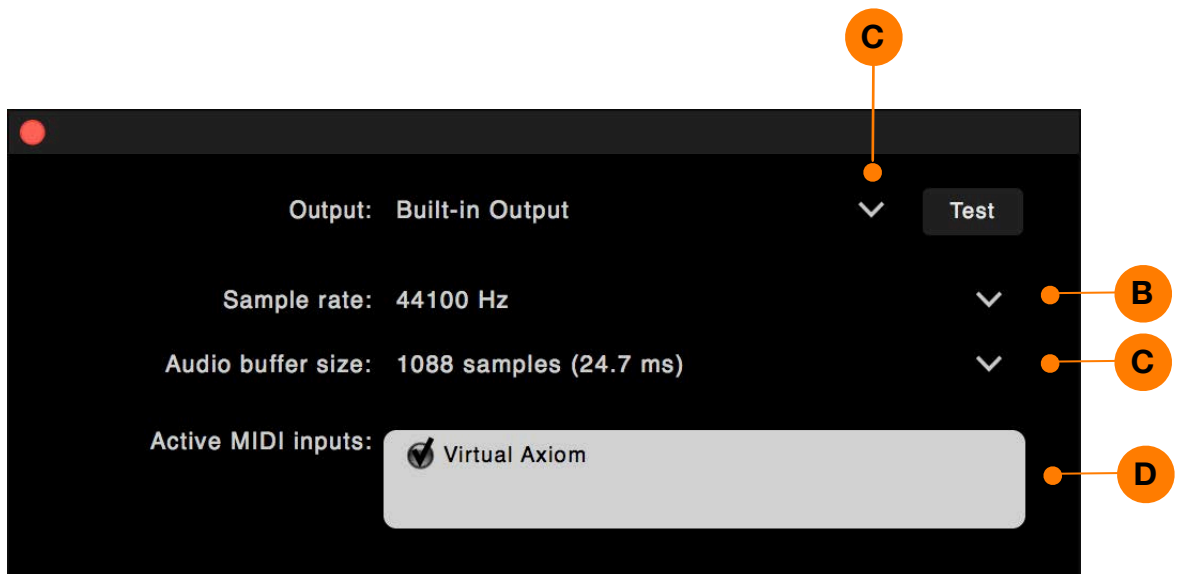
## USING CIRCLE<sup>2</sup> IN DIFFERENT MODES

Circle<sup>2</sup> can be used in different modes, as a plug-in in the formats Apple Audio Unit plug-in, Digidesign RTAS and Steinberg VST. Once installed Circle<sup>2</sup> becomes available to use as a plug-in inside your host software, such as Cubase, Logic or Ableton Live.

In addition to being available as a plug-in, Circle<sup>2</sup> can be used as a standalone application. On the Mac, the standalone version of Circle<sup>2</sup> is installed in the directory /Applications and on the PC in the directory you chose when installing Circle<sup>2</sup>.

### CIRCLE<sup>2</sup> AS A STANDALONE APPLICATION

To launch Circle<sup>2</sup> as a standalone application, simply double click the icon. To setup the sound card and MIDI interface used by Circle<sup>2</sup>, click Options in Circle<sup>2</sup>'s application window bar and select "Audio & MIDI". You will then be presented with the following window which you can use to set the sounds card and MIDI interface used by Circle<sup>2</sup>.



- A** **Audio Device Drop Menu.** Here the available audio devices or sound cards on your system are displayed. Simply selection the device you want Circle<sup>2</sup> to use from the drop menu.

- B** **Sample Rate Drop Menu.** Here the available sample rates for the selected audio device will be displayed. Select the sample rate you would like Circle<sup>2</sup> to run at from the available list.
- C** **Audio Buffer Size Drop Menu,** is used to select the size of the audio buffer used by Circle<sup>2</sup>. Smaller buffer sizes result in lower latency, which is the time it takes Circle<sup>2</sup> to respond to changes in parameters or new notes. Smaller buffers and lower latency however come at a cost, as more processor power is used over large buffer sizes.
- D** **Active MIDI Inputs,** shows the available MIDI inputs that are present on your computer. Simply check the box beside the entry for the MIDI input you want to use with Circle<sup>2</sup>.

# 6

## Circle<sup>2</sup> and the Future

As you get familiar with Circle<sup>2</sup>, you may want to delve deeper into sound design. In the next section we give some links to further reading on computer music and sound design, tell you how to keep up to date with Circle<sup>2</sup> and where to get help if you have a problem.

## **LEARNING MORE**

### **USEFUL ONLINE SOUND DESIGN TUTORIALS**

Gordon Reid's Synth Secrets Series

<http://www.soundonsound.com/sos/allsynthsecrets.htm>

Howard Scarr's Virus Tutorial

[http://www.zorchmusic.com/hscarr/Virus\\_Tutorial\\_English.zip](http://www.zorchmusic.com/hscarr/Virus_Tutorial_English.zip)

### **KEEP UP TO DATE WITH CIRCLE**

As time passes and we get feedback from Circle<sup>2</sup> users, we will periodically release updates that may contain extra features, bug fixes or new sound banks. The best way to keep up to date and to be informed of new happenings with Circle<sup>2</sup> is to sign up to our mailing list. You can do so by visiting [www.futureaudioworkshop.com](http://www.futureaudioworkshop.com) and entering your email address into the box provided.

A further way to keep up to date with Circle<sup>2</sup> and general Future Audio Workshop is to visit the blog at:

<http://www.futureaudioworkshop.com/weblog>

## GETTING HELP

Every now and then you may need help on a certain problem, encounter an issue with Circle<sup>2</sup> or your system that you would like solved, or have a query that you would like answered.

### 3 STEPS TO GETTING HELP

1. Visit the Circle<sup>2</sup> Support Section at [www.futureaudioworkshop.com/circle/support](http://www.futureaudioworkshop.com/circle/support). Here you will find answers and FAQ's on many different subjects related to Circle<sup>2</sup>.
2. If you were unable to find a specific answer to your query in the support section of the Future Audio Workshop site, visit the online forums at [www.futureaudioworkshop.com/forums](http://www.futureaudioworkshop.com/forums) and use the provided search function to see if your query has been discussed and answered previously.
3. Contact **[support@futureaudioworkshop.com](mailto:support@futureaudioworkshop.com)** with a description of the question or query you would like answered.