

# GO2

The screenshot displays the GO2 software interface, which is a digital synthesizer and sequencer. The interface is divided into several functional sections:

- OSC/XY:** Contains two oscillators (Saw A and Saw B) with various waveforms and mixing options. A central circular display shows the waveform.
- FILTER:** Includes a 24dB LP II filter with controls for CUTOFF, Q, TYPE, and MOD.
- AMP:** Features an EXP ENV (envelope) section with parameters for DISTORT, PAN, VEL-VOL, and VOLUME.
- FILTER ENV:** Provides envelope control for the filter with parameters for ATTACK, DECAY, SUSTAIN, and RELEASE.
- LFO:** Includes an LFO (Low Frequency Oscillator) section with parameters for MODE (Poly, Sin), WAVE, SPEED, and SYNC.
- HP FILTER:** Contains a high-pass filter section with parameters for ON, TRACK, Q, and FREQ.
- ENV:** Provides an additional envelope section with parameters for ATTACK, DECAY, SUSTAIN, FADE, and RELEASE.
- PLAY MODE:** Includes an ARP (Arpeggiator) section with parameters for STEPS (16), SPEED (1x), MODE (Up), OCTAVE (1), and various timing options (TIED, SWING, SLIDE, V/K, SYNC, LATCH).
- CHORD:** A table for defining chords with parameters for STEP, TIE, SLIDE, TUNE, VEL, CHORD, and FREE.
- CHORUS:** Includes a CHORUS section with parameters for BYPASS, ON, LEN, WIDTH, SPEED, LP, HP, and MIX.
- FLANGER/PHASER:** Includes a FLANGER/PHASER section with parameters for ON, PITCH, FEED, WIDTH, SPEED, PAN, and MIX.
- DELAY:** Includes a DELAY section with parameters for ON, REVERSE, LEFT, RIGHT, FEED, LP, HP, and MIX.



## Manual

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# WELCOME

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In the Rob Papen world of synthesis there was one type of synthesizer missing...

A synthesizer that presents all its controls and features in a single window.

The current Rob Papen collection holds synthesizers with many features and various synthesis types which at times can be daunting to master in all their depths.

That is why we went looking for something simple and direct.

We were inspired by synthesizers of the eighties, when we worked with flagship synthesizers like the Roland Jupiter-8, but also the simple and direct SH-101. Both became classic synthesizers in their own right.

We applied the less-is-more principle and came up with a synthesizer that is very accessible and at the same time can draw from Rob Papen's extensive synthesizer building experience. Certainly, Go2 is of the what-you-see-is-what-you-get type but boasts some unique features.

It sounds as good as any Rob Papen synth.

So say hello to Go2 and enjoy Go2!

Rob Papen and Team

# NAVIGATING Go2

First, we'll give you a quick overview of Go2, so you can find your way around. You will find all the details that make up Go2 in the following chapters.



1	Preset Browser	In this section, you browse, load and save Presets. There are also the sound preview button and MIDI note indicator
2	Oscillator	The Oscillator area contains all oscillator controls to adjust its parameters. It also contains the XY Pad
3	Filter, Amplifier, Free Envelope and LFO	This section contains the controls to shape the raw sound of the oscillators through filtering and volume control. You will also find the Free Envelope and Free LFO for modulation here.
4	Play Mode	This section gives you access to Go2's various play modes
5	Modulation and Arpeggiator	The modulation section contains an LFO and an Envelope as modulation sources and an 8 -slot modulation matrix. The Arpeggiator is fully programmable in 16 steps
6	Effects	Go2's effect section contains a Chorus, Phaser / Flanger and Delay / Reverb

# CONTROLS

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Go2 uses controller knobs, sliders, buttons and drop-down menus to adjust its parameters. You operate the controls with the mouse. Click-and-hold the control and move it to the desired value. While you move the control, its name and value are shown in Go2's read-out screen, which is located at the top of the plug-in panel.

If you hold the shift-key while moving the mouse, you can make minor adjustments with high accuracy. Consider this a fine-tuning method. To reset a control to its default value you can either double-click or ctrl-click the control.

There are four kinds of buttons:

<i>On / Off Buttons</i>	The value toggles between on and off with every mouse click. An example is the Draw Osc button.
<i>Radio Buttons</i>	Select one option out of several predefined settings by clicking on the desired value, as in the Filter Envelope invert buttons
<i>Trigger Buttons</i>	A Trigger Button starts an action, such as the sound preview.
<i>Menu Buttons</i>	Whilst the menus are technically not buttons, in practice they work like radio buttons. The first click opens the menu which lists all possible values. With a second click, you select the value.

# PRESETS



Go2 uses the regular Reason Preset controls. A click on the preset menu opens a list of Presets in the current folder. A click on the Up / Down buttons selects the previous or next Preset in the folder`

<i>Patch Browser</i>	The Patch Browser button opens the Patch Browser gives you access to Presets in Folders other than the current one
<i>Note (C3)</i>	Click to play a C3 note to audition the current Preset
<i>Save Patch</i>	The Save Patch button saves the current Preset
<i>Note Indicator</i>	The Note Indicator lights up whenever you play a note

# OSCILLATOR



The heart of Go2 is the morph oscillator. This oscillator uses two different waveforms and morphs the two. Go2 has several Morph Modes to accomplish this. Since the XY Pad plays a prominent role in morphing waveforms, we have placed it in the oscillator section.

At first glance it looks like Go2 has only one

oscillator. But this is not the case. The moment you open the Spread Amount control, Go2 turns into a dual oscillator setup. The two oscillators' tuning spreads as you open the control. In the MOD (modulation section) of Go2 you can modulate the 2nd oscillator. The destinations are called Oscillator-Up Spread Semi-Tune and Oscillator-Up Spread Fine-tune. You can target the second oscillator's pitch in a modulation routing as soon as you have activated Spread.

## First and Seconds Waveforms (Wave-A and Wave-B)

The two Waveform menus let you select which waveforms are used for morphing. These are called Wave-A and Wave-B. Go2 offers 128 different waveforms ranging from classic analogue style Waveforms including Saw, Square, Noise to Additive and Spectral Waveforms.

The Morph Amount slider sets the initial morph position to combine the waveforms. How they morph depends on the Morph Mode (as described below).

## Oscillator Morph Mode

The Morph Mode menu determines how the oscillator combines the First and Second Wave. Please note that if you use white or pink noise, the morph mode defaults to Mix. In this case the Morph Amount determines the mix level between the Noise Wave and the second Wave.

Mix	The First Wave is mixed with the Second Wave based on volume. At 0% Morph Amount, only the First Wave is used, at 100% Morph Amount, only the Second Wave is used and at 50% Morph Amount an average of <b>the</b> First and Second Wave is used.
Morph	The partials (harmonics) of the First Wave and the Second Wave are mixed per partial. At 0% Morph Amount only the First Wave Partials are used. At 100% Morph Amount, only the Second Wave partials are used, and at 50% an average of First and Second Wave partials is used.
Ring	The Second Wave is used to ring modulate the First Wave, with the Morph Amount changing the amount of Ring Modulation.
FM	The Second Wave is used to modulate the frequency (FM) of the First Wave, with the Morph Amount changing the amount of Frequency Modulation.
Inter	The First Wave wavetable is mixed with the Second Wave wavetable. At 0% Morph Amount, only the First Wave wavetable is used, at 100% Morph Amount only the Second Wave wavetable is used. At intermediate Morph Amounts a wavetable is used which starts as the First Wave, and ends as the Second Wave wavetable.  Depending on the Morph Amount, these merge at different points in the wavetable. Lower values mean more of First Wave wavetable is used, higher values mean that more of Second Wave wavetable is used.
Range	Go2's wavetables contain waveforms that transition from the First Wave to the Second Wave. If the First Wave is a Sine and the Second Wave is a Triangle, Go2 calculates the intermediate waveforms. Range Mode cannot use White Noise or Pink Noise waves,

## MAIN OSCILLATOR CONTROLS

### Oct

Oct sets the oscillator pitch in octaves and has a range from -2 to +2 octaves.

### Spread

Spread creates a stacked 2 oscillator sound, based on the main oscillator. Two oscillators are used: one at a slightly higher pitch and the other at slightly lower pitch than the original pitch. In practice it fattens up the sound. The spread control sets the pitch difference and higher settings will make the effect more pronounced.

At a Spread setting of 0, only one oscillator will play. This may be desired if you intend to imitate a real-life instrument. Imagine imitating a trumpet sound, you only need one oscillator.

## **Sub**

Sub controls the volume of the Sub-oscillator. The Sub-oscillator is tuned to be one octave below the main oscillator. The sub-oscillator knob lets you select two different waveforms. A counter clockwise position produces a Sine waveform. Turn it clockwise and it produces a Square waveform. The centre position turns the Sub-oscillator off.

## **Sym**

Sym controls the symmetry of the oscillator waveform. This is most commonly used with the Square waveform where it changes the pulse width. It is also applicable to other waveforms except for the White Noise and Pink Noise waveforms. Use the Sym control for subtle harmonic changes.

Note: on many waveforms, symmetry changes can be adding a little extra to the waveform. In some cases though, it may deteriorate the sound quality. To avoid these unintended consequences (with for instance the SAW wave), select a different waveform in Go2. Upon selection of the new waveform, the symmetry parameter will reset to zero.

## **SMOD (Symmetry Modulation) Amount**

Symmetry modulation sets the amount of modulation of the symmetry position. Behind the scenes, a Sine wave LFO is used to continuously move the symmetry position. Note: If you do not hear any changes you may need to raise the Smod amount and/ or the Speed parameter. If either is zero this means, the LFO is not active.

## **SMOD (Symmetry Modulation) Speed**

Smod Speed sets the frequency of the LFO that changes the symmetry position.

# XY CONTROLS



The XY Pad is a combination of a live, interactive control and an automated programmable modulation source. Use the mouse to control the two Morph Amount and four Free parameters simultaneously, by moving the XY Dot around the XY Pad. It is possible to record these movements as paths and use the XY Pad as a

programmable two-dimensional LFO.

Consider the XY controller to be a combination of six linked modulation paths. The position of the XY dot is the modulation source for six destinations positioned around the XY Pad.

## XY basics – Move / Edit

The XY Pad can be sent to drive up to 6 parameters simultaneously (XY Morph and four freely assignable). Three of those respond to the X-position (X Morph + X Free 1 and 2) and three do respond to the Y-position (Y Morph + Y Free 1 and 2). The Mod Amount controls set the level of modulation for each destination. For the XY Pad to have any effect, the Mod Amount controls need to be set to a non-zero value.

Drag the dot across the XY Pad (use the mouse to click and drag) when the XY Pad is in Live mode to hear the effect of the Modulations that are active.

It is possible to edit the path of the moving dot on the XY Pad. Switch the XY Pad status to Edit and drag any of the points around. Go2 will capture the new path in its memory. After editing, the path is ready for playback. Hit the Play button and play a note. You will see the XY indicator move across the screen following the edited path.

The XY path is saved as part of the Preset and is ready to be used when you recall the Preset.

## XY CONTROLS

### Edit

The Edit button located near the XY Pad puts the XY path in Edit mode. While in Edit mode, you can move the path's points around and edit the XY Path manually.

### Speed

As well as being able to sync to a set musical time, you can scale the playback speed manually or via a modulation source. The Speed knob changes the playback speed from taking 1/16 of the original time, to 16 times the original time.

### Mode

The XY Pad operates in Poly, Free or Mono mode. The mode setting determines how the XY responds when you play one or simultaneous notes.

<i>Poly</i>	Each note you play follows its own XY path and each path starts from its initial position.
<i>Free</i>	The XY path is free running, so it is not reset when you play a key. All notes share the same XY path. In Free mode the XY Path loops automatically. If you are using a sequencer the XY Free is reset when you restart the sequencer.
<i>Mono</i>	All notes played share the same XY path, but the XY path is reset every time you play a new key.

### Loop

When loop is On, upon reaching the end of the path, the green dot will jump to the start and repeat the movement. In the < > mode, the XY path loops but travels back and forth along the path. When loop is Off it travels only one-way once.

### Sync To

By default, when the XY path is replayed, it plays back at the speed with which it was recorded. However, Sync enables you to play back the XY path within a set timeframe. This can be a beat or a full measure. The path timing will get scaled to the selected Sync To value.

### Points

Paths are stored as 64 points and their connecting edges. You can change the number of points stored, using the Points menu. The minimum path length is 2 points, suitable for very straightforward paths. If you return the resolution to 64 points (Off), the original points will be restored.

## Space Quantize

Space Quantize maps the points in the current path to a set of grid lines. The default setting is Off, but when you select a grid of 32, 16, 8 or 4 grid lines, Go2 will snap all the points to their nearest grid point. The Quantize setting is non-destructive. Disabling Space Quantize will return the points to their original position.

## Time Quantize

Time Quantize sets the update frequency of the XY position. Use this in conjunction with the Sync function to find the optimised balance between update frequency and number of points in the path.

## Draw Osc

The XY Pad shows the current XY position and the XY path. The XY Pad also displays the oscillator output waveform. The latter can be disabled by turning off Draw Osc.

## XY Menu

A click on the Command button opens the XY Menu with the following options:

<i>Clear All</i>	Resets all XY settings
<i>Clear Path</i>	Clears the XY path
<i>Clear Modulation</i>	Resets all XY modulations controls
<i>Reset Position</i>	Resets the XY position
<i>Set to circle, square, ...</i>	Sets the XY path to a circle, square and other preset shapes
<i>Reverse</i>	Reverses the XY path, so it will be traversed backwards
<i>Flip Horizontally</i>	Flips the XY path horizontally
<i>Flip Vertically</i>	Flips the XY path vertically
<i>Rotate</i>	Rotates the XY path by a set number of degrees
<i>Increase / Decrease Size</i>	Scales the XY path around the centre by a set amount
<i>Smooth</i>	Smooths the XY Path

# FILTER



The sound generated by the Oscillator is rich in harmonics and is passed on to the Filter section. Depending on the selected Filter Type and parameter settings, the filters change the harmonic content of the sound by removing selected frequencies. Go2 has two filters, Main and High Pass. They are connected in series. The Main Filter comes first, followed by the High Pass Filter.

## Filter Controls

### Freq

The Cutoff Frequency sets the frequency above or below which the filter begins to filter frequencies. For instance, if you set the Cutoff to 2000Hz and use a 12dB Lowpass filter, it reduces any frequencies above 2000Hz. Any frequencies at 4000Hz will be reduced by

12dB. The Cutoff Frequency can be static at a single set frequency, but for more dynamic sounds, try modulating the Cutoff Frequency with the Filter Envelope, Keyboard tracking or Modulation Wheel.

### Q (Resonance)

Q is the resonance level of the filter. Resonance emphasizes frequencies around the Cutoff frequency and creates a peak in the frequency spectrum. As you increase the Resonance, the effect becomes more pronounced until the filter self-oscillates. In the Comb Filter the Resonance controls the amount of feedback.

## Filter Type

<i>Bypass</i>	The filter is bypassed and the sound passes through unaffected
<i>12dB LowPass</i>	Low frequencies pass through this filter; those above the Cutoff frequency are reduced by 12dB per octave.
<i>12dB BandPass</i>	This filter mode is a combination of 12dB LowPass and 12dB HighPass filters. Only those frequencies near the filter Cutoff frequency pass through (a band of frequencies), the resonance (Q), controls the width of this band so that low and high frequencies are removed.

<i>24dB LowPass II</i>	This filter operates the same as the 24db LowPass Filter Type 1, but it has a different tonal character
<i>24dB BandPass</i>	This filter mode is a combination of a 24dB LowPass and 24dB HighPass filter. Only those frequencies near the filter Cutoff frequency pass through (a band of frequencies), the resonance (Q) controls the width of this band, so low and high frequencies are removed.
<i>24db Notch</i>	The frequencies near the filter Cutoff frequency are reduced in volume (24dB), the resonance controls the width of this region.
<i>Comb</i>	The Comb Filter is built around a very short delay, which emphasizes the comb filter frequency. The Cutoff frequency controls the length of this delay and resonance (Q) the feedback of the filter.

High Pass Filters are not part of the Main Filter, as there is a dedicated High Pass filter (see below).

## Cutoff Frequency Modulation

### Envelope (Env)

The Filter Envelope moves the filter Cutoff frequency, following the contour of the envelope. The Envelope is part of the Filter section. Keep in mind that if you use negative modulation, the control signal is inverted: as the envelope level rises the filter frequency is lowered. Note the Filter Envelope Invert button at the top of the filter section.

### Velocity (Vel)

Velocity modulation changes the Main Filter Frequency based on how hard you strike the key (its velocity). If Go2 is in Arp mode, any Arpeggiator velocity settings will change the Main Filter Frequency.

### KeyTrk

Key tracking applies Cutoff Frequency modulation based on note position. Typically, the Cutoff frequency increases, i.e. the filter opens, with notes played higher on the keyboard. When you use negative modulation values, the Main Filter Frequency decreases with increased pitch.

### Modulation Wheel (ModW)

This control uses the position of the modulation wheel to determine the cutoff frequency of the filter. The strength of the Mod Wheel – Filter Frequency coupling is set by the level of this control.

## **FILTER ENVELOPE**

The Filter Envelope is hard-wired to control the Main Filter Frequency. The level is set by the Env Amount control in the Filter section. The Filter Envelope Invert button determines its polarity (whether it increases or decreases the Main Filter Frequency).

An Envelope is a time-based modulation source in a synthesizer. When you play a key, the envelope is triggered and moves from 0% to 100% and back to 0% when you release the key. The envelope is made up of five segments. The first part is known as the Attack. The Attack control represents the time it takes to reach 100%. The second part is known as the Decay and controls the time it takes to reach the Sustain level. The Sustain level is the level maintained while the key is being held. Finally, when you release the key, the Release segment sets the time for the Envelope level to return to 0%.

To hear the full effect of the Filter Envelope you should open the Env amount, which you can find in the Filter section.

### **Attack**

An Envelope rises from 0 to 100% and back to 0% when the key is released. Attack controls how quickly it rises to 100%. The further you open the Attack control, the longer it takes to reach 100%. An Attack time of 0 start the Envelope instantly at full level (100%).

### **Decay**

After the Attack stage, with the Envelope at 100%, the Decay stage begins. Decay reduces the Envelope level to the Sustain level over a set time. If you use a long Decay, it takes longer to reach the Sustain level. If the Sustain level is 100% the Decay stage plays no role as the Sustain level is reached immediately after the Attack stage.

### **Sustain**

Sustain is a level control. After the Attack and Decay stage, the Envelope reaches the Sustain level and remains at this level while you hold the key. Sustain level in the Filter Envelope represents the Cutoff Frequency while you hold the key(s).

### **Release**

When you release a key (note), the Release stage starts. The Envelope drops from its current level to 0%, in a time set by the Release control.

### **HighPass Filter**

The High Pass Filter(HP) works in series with the Main filter. It reduces frequencies below the High Pass Filter Frequency and is a dedicated 12dB Octave High Pass filter.

In addition to the Cutoff Frequency control (with key tracking which can be turned On / Off), the High Pass Filter has its own resonance control.

# AMPLIFIER

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Where the Oscillator section controls the pitch and the filter section the timbre, the amplifier section is responsible for the volume. It amplifies the signal and controls the Volume and Panning.

An important controller of the Volume is the Volume Envelope. This determines the volume contour of every voice. The Velocity Control controls the response of Go2 to the Velocity of the keyboard or Arpeggiator.

## Volume

The Volume sets the overall volume of the Preset. Use this control to adjust the relative volumes between Presets in a Bank.

## Distortion

The Amplifier incorporates a Distortion section. In practice, it increases the volume of the signal and adds distortion (additional overtones) to the signal. The Amount control sets the level of distortion.

The special feature of having the distortion at this stage is that it gives each voice of Go2 its own distortion. When you play multiple notes, each note has its own Distortion effect. This results in a different sound character compared to having all voices going through a single distortion unit.

## Pan

The Pan control places the sound in a stereo image. Fully counter clockwise is left and clockwise represents right in the stereo field.

## Velocity (Vel > Vol)

The Velocity control determines the volume response to changes in note velocity. It applies to notes played on a keyboard and those triggered by Go2's Arpeggiator.

## Volume Envelope

An envelope generates a time-based modulation signal. When triggered – typically by playing a note – it moves from 0% up to 100% and back to 0% when you release the key. The Volume Envelope determines the volume contour of a sound.

## Attack

The first part is known as the Attack stage. It represents the time it takes for the envelope to reach 100%. If you open the Attack knob, it takes longer to go from 0 to 100%. With Attack closed, the envelope starts at 100%.

## **Decay**

After the Attack stage, with the envelope at 100%, the Decay stage starts. The Decay stage brings the volume down to the sustain level. If the sustain is set to 5 %, the decay brings the volume down to 50% and stays there for as long as the key is held. If you use a long decay, it takes long to reach the sustain level. This is useful for evolving pad sounds. Short decay times are a good ingredient for percussive sounds. If the sustain level is 100% the impact of the decay stage is effectively eliminated.

## **Sustain**

The Sustain stage is characterised by a (Sustain) level setting. After the Attack and Decay stage, the envelope reaches the sustain stage and remains here for as long as you hold a key. The sustain level is the level of this sustain stage and as such is main control for the perceived volume of a sound.

## **Release**

The Envelope Release stage starts when you release a key. The envelope fades out from the sustain level to 0% in the time set by the Release control.

## **Exp Env**

The Exp Env control sets the shape of the envelope decay and release stages. The two options are Linear (Off) and Exponential (On).

# LFO



Go2 contains a Free LFO that generates modulation signals to be used as a source in a modulation path.

## Waveform type

The available waveforms are Sine, Triangle, Saw Up, Saw Down, Square, S&H. The waveform determines the modulation pattern of the LFO. Sine and Triangle are often used because these move the LFO up and down in a smooth fashion. The other waveforms are more suitable for special effects. The Phase sets the

starting point of the LFO waveform. It is measured in degrees, where 0 equals the start of the wave, 90 is a quarter in, 180 is the halfway point and 270 is 3 quarters through. In practice, this lets you choose the start level of the oscillator. The actual level depends on the selected waveform.

## Speed

The Speed control sets the LFO frequency. If the Sync button is On, speed follows the host tempo.

## Sync

With the Sync Switch On, the LFO speed follows the host tempo. In Sync Mode, you can use the Speed parameter to select the desired beats / divisions setting.

## Mode

The Mode setting determines the running of the LFO in relation to key triggers. The LFO reset type has three different modes:

<i>Poly</i>	In poly mode, each note played has its own LFO.
<i>Free</i>	The LFO is free running and all notes share the same LFO. The LFO is always running and does not reset when you press a key.
<i>Mono</i>	Similar to free mode. All notes share the same LFO. However, when you press a key in Mono mode, the LFO is reset to its initial phase (start position)

# FREE ENVELOPE

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Go2 has a free envelope that generates modulation signals to be used as a source in a modulation path. The Free Envelope will change the value of the destination parameter over time - for example to create a sweep in the oscillator's pitch. When you play a key, the envelope moves from 0% to 100% and back to 0% when you release the key.

The Free Envelope is made up of five segments. The first part is known as the Attack. This represents the time it takes to reach 100%. The second part is known as the Decay and represents the time it takes to reach the Sustain level. The Sustain level is the level maintained while the key is being held. Finally, when you release the key, the Release segment sets the time for the Envelope level to return to 0%.

An unusual feature of the Free Envelope is Fade. Fade operates as a second Attack or Decay stage and starts as soon as the Decay reaches the Sustain level. Positive values take the envelope from the Sustain level up to 100%. Negative values take the envelope from the Sustain level down to 0%.

## Attack

An Envelope rises from 0 to 100% and back to 0% when the key is released. Attack controls how quickly it rises to 100%. The further you open the Attack control, the longer it takes to reach 100%. An Attack time of 0 start the Envelope instantly at full level (100%).

## Decay

After the Attack stage, with the Envelope at 100%, the Decay stage begins. Decay reduces the Envelope level to the Sustain level over a set time. If you use a long Decay, it takes longer to reach the Sustain level. If the Sustain level is 100% the Decay stage plays no role as the Sustain level is reached immediately after the Attack stage.

## Sustain

Sustain is a level control. After the Attack and Decay stage, the Envelope reaches the Sustain level and remains at this level while you hold the key. Sustain level in the Filter Envelope represents the Cutoff Frequency while you hold the key(s).

## Sustain Fade

If the Fade is set to 0 (Off), the Sustain works as a classic Sustain. If you open the Fade amount clockwise it creates a second Attack stage. In this case when the Decay reaches the Sustain level, the envelope level starts to rise to 100% in the time set by the Fade control. If you turn the Fade control counter-clockwise it creates a second Decay. In this case, when the Decay reaches the Sustain level, the envelope level starts to fall to 0% in the time set by the Fade control.

**Release**

When you release a key (note), the Release stage starts. The Envelope drops from its current level to 0%, in a time set by the Release control.

**Sync**

When Sync is turned on the envelope segment lengths (in quarter-beats) are synced to the tempo of the host. When Sync is Off, the envelope segment lengths are set in milliseconds and the envelope times are independent of the host's tempo.

# PLAY MODE



Play Mode defines how Go2 responds to notes played, polyphonically or monophonic or by triggering the Arpeggiator.

## Play Mode

<i>Poly</i>	Multiple notes (up to 16) can be played at the same time.
<i>Mono</i>	Go2 is monophonic and uses 1 voice. Only a single note can be played at a time. Any new note will stop the previous note.
<i>Legato</i>	Legato mode is similar to mono mode and plays a single note at a time. If you play overlapping notes, the envelopes and LFOs will not retrigger for the new note. The pitch is the only thing that changes.
<i>Arpeggiator</i>	The Arpeggiator is active and is triggered by the first note played. Please see the Arpeggiator Chapter for details on all the Arpeggiator settings.

## Portamento Speed and Mode

Portamento creates a glide effect whereby the pitch change between notes is a gradual one. The Portamento Speed defines the time it takes to transition from one note's pitch to another.

Portamento operates in the following modes:

<i>None</i>	No portamento.
<i>Constant Rate</i>	The note pitch changes at a constant rate (speed) from one note to the next. Larger note intervals take a longer time.
<i>Constant Time</i>	The pitch transition between notes always take the same time, regardless of the note interval.
<i>Held Rate</i>	This mode works the same as constant rate, but only affects overlapping notes (legato style)
<i>Held Time</i>	This mode works the same as constant time, but only affects overlapping notes (legato style)

## Port Amount

This control sets the rate or time for the portamento effect.

## Unison

In Unison mode, Go2 plays up-to 4 unison voices, for each note played. This works at an oscillator / filter level, so you can still play up-to 16 voices in poly mode.

The Unison detune parameter changes the pitch slightly for all these voices. This gives you an extremely rich sounding stack of voices. The unison parameters are an excellent tool to create fat lead sounds.

Go2's Unison can be used to play chords, where you play a single note and Go2 plays a chord. This opens up creative possibilities when used in the Arpeggiator, since you can set each step to play a different Unison mode / chord!

Each Unison voice can have Pitch, Volume, Pan, Morph and main Filter Frequency as a modulation destination, giving you great control over the Unison voices. You need to access this in the MOD (modulation) section of Go2.

The table below lists the unison options:

<i>Unison 2 - 4</i>	This combines multiple voices for each note played. If you use the Unison detune, all voices are detuned resulting in a fatter sound.
<i>2 Octave</i>	Plays 2 voices for each note played. One at normal pitch, the other one octave up. Unison detune has no effect in this Unison mode.

<i>3 Octave</i>	Plays 3 voices for each note played. One at normal pitch, a second one octave down and the third one, one octave up. Unison detune has no effect in this Unison mode.
<i>2 SP</i>	Plays the original note plus an additional note one octave below. Both will play in Unison 2 mode, so a total of 4 voices will play for each note that is played.
<i>Major to Diminished 7th</i>	Plays the selected chord instead of playing the voices in unison. The key you play becomes the chord's root note. For instance, Major will play the root note, then the 2nd voice 4 semitones up from the root note, and the 3rd voice 7 semitones up from the root note. Note: The Unison detune parameter has no effect in these Unison modes.

### **Detune Amount**

Unison Detune Amount controls the level of detuning between the stacked voices in Unison 2/3/4 play modes. It creates a natural chorus effect. Note: with Major up to Diminished 7th chord settings, detune is deactivated.

### **Stereo Spread**

Stereo spread places the unison voices in a stereo image, and in doing so widens the sound and creates a spatial effect. In modes with 2 unison voices they are panned left and right, in those with 3 unison voices they are panned left, panned right and centred.

### **Pitch Bend Up / Down**

The maximum range for the Pitch Bend wheel is defined through separate Up and Down amounts. The unit used is semi-tones.

### **Drift**

The Drift switch simulates small variations that occur in analog electronic circuits. Turn it on to add some analogue character to the Go2 tone

### **Pitch Bend**

The Pitch Bend Wheel works as a pitch bend wheel on MIDI keyboards. It lets you bend the notes' pitch up and down. The maximum amount of pitch change is set with the Pitch Bend Up / Down controls.

### **Mod Wheel**

The Mod Wheel works as a Modulation Wheel on MIDI keyboards. It serves as a modulation source in modulation paths.

# ARPEGGIATOR



Go2 offers a classic style arpeggiator. An arpeggiator (Arp) plays through a chord as individual notes in sequence. For example, if you play a C-major chord, the arpeggiator will first play the C, then the E and finally the G. Depending on the arpeggiator mode, it will then cycle through these notes again and again, up and down until you release the notes. The arpeggiator has a built-in sequencer for making rhythmic patterns, and offers Tune, Tie, Velocity, Unison and Free modulation settings per step/note! With every note that it plays, the arpeggiator steps through its sequence. This lets you determine how the arpeggiator plays each individual note.

To activate the arpeggiator, click on the On button in the Arpeggiator screen (or set the play mode to Arp).

## Arpeggiator Screen

The Arpeggiator has up to 16 steps. Per step you can make the following settings:

<i>Step Number</i>	Click on a step number to mute / un-mute it
<i>Tie</i>	Tie links the step to the previous step and as such extends the note length.
<i>Slide</i>	Slides the pitch from one step to the next. The slide rate is set by the Slide control
<i>Tune</i>	Each step has a range of -3 octaves to +3 octaves in semi-tones
<i>Vel</i>	Vel defines the velocity value of the note
<i>Unison</i>	A unique feature of Go2 is that you can set the Unison mode for each step individually, so allowing each step to play different chords. Set – will play the note with the current unison mode, Off – will play the note with Unison off i.e. it'll play a single note with no unison, and the other settings will play the selected Unison mode / chord. Please see the Unison mode section for more information.
<i>Free</i>	The Free property can be used in the modulation matrix as a modulation source.

What follows is a listing of arpeggiator controls that affect the arpeggiator and that apply to all steps.

### Steps

Steps sets the number of steps in the Arpeggiator pattern, from 1 to 16 steps.

### Speed

The Speed control sets the speed of the Arpeggiator relative to the Host's tempo, for example 2 x tempo or  $\frac{1}{4}$  x tempo.

## Arp Mode

The arpeggiator mode controls the order in which the arpeggiator plays its notes

<i>Up</i>	The notes are played from low to high
<i>Down</i>	The notes are played from high to low
<i>Up/Down</i>	The notes are played from low to high followed by from high to low
<i>Down/Up</i>	The notes are played from high to low followed by from low to high
<i>Random</i>	The notes are played in random order
<i>Ordered</i>	The notes are played in the order in which they were triggered, i.e. first note played first and last note played last
<i>Rev. Ordered</i>	The notes are played in the reverse order in which they were triggered, i.e. last note played first and first note played last
<i>Ordered Up/Down</i>	The notes are played from first to last followed by last to first
<i>Ordered Down/Up</i>	The notes are played from last to first followed by first to last
<i>Chord</i>	The Arpeggiator plays all notes as chord in a rhythmic pattern. In Chord mode you cannot set the unison mode.
<i>Sequencer</i>	In this mode the arpeggiator acts as a sequencer and plays the programmed pitches relative to the played note and continues playing in sequence with every new note played.
<i>Sequencer Reset</i>	In this mode the arpeggiator acts as a sequencer and plays the programmed pitches relative to the played note. The Sequencer Resets to step 1 with every new note played.

## Octave

The octave setting gives you the option to play the arpeggiated notes in multiple octaves, relative to the original notes. For example, an octave setting of 2 means that the original notes will play first, followed by the same notes one octave higher.

## Tied Mode

Tied mode lets you select whether tied steps use their own programmed values for Tuning, Velocity etc or use the values of the step they are tied to. The options are:

<i>Normal</i>	Tied steps do not have individual slide, tune, velocity and free settings.
<i>Special</i>	Tied steps do have still individual slide, tune, velocity and free settings.
<i>Toggle 1</i>	The Arpeggiator alternates between Special Mode and Normal Mode (Special Mode on the first cycle).
<i>Toggle 2</i>	The Arpeggiator alternates between Normal Mode and Special Mode (Normal Mode on the first cycle).

### Lock Mode

Lock Mode locks the current arpeggiator sequence. It keeps it going even when you change Presets There are 3 modes:

<i>Off</i>	Lock is turned off
<i>On</i>	Lock is turned on. The arpeggiator sequence stays the same when you change Presets, but it can't be modified. It will not change the new Preset.
<i>Set</i>	The current (locked) arpeggiator sequence is saved with new Preset. Locking is turned off in the new Preset.

### Swing

Swing is a control that allows you to change the rhythmic feel of the arpeggiator. It does this by slightly moving every other note relative a fixed timing grid. Whether it suits your work depends very much of the piece of music you are working on, so you we encourage you to experiment with different values here.

### Slide

Slide works as an intra-sequence portamento. It sets the time it takes for the pitch to change from that of the selected step to the next.

### Vel / Key

The velocity of the steps in the arpeggiator sequence can be controlled by their programmed values, by the velocity of the key played that is used to trigger the arpeggiator or a combination of both. The Vel / Key control sets the balance between these.

### Host Sync

Host Sync synchronises the Arpeggiator speed to that of the DAW host. This is enabled by default.

## **Latch**

Latch frees your hands. When latch is turned on you don't need to keep holding notes for the arpeggiator to continue playing. Tip: you can use the sustain pedal to latch and unlatch the arpeggiator. Please see the MIDI section on how to set this up.

## **Arpeggiator Command Menu**

The arpeggiator command menu allows you to edit, copy, paste, clear, save and load arpeggiator settings. Click on the command button to open this menu.

# MODULATION MATRIX

SLOT	SOURCE	DESTINATION	AMOUNT
1	Pitchbend	XY Speed ▲	4 × Speed
2	None	None ▲	0 %
3	None	None ▲	0 %
4	None	None ▲	0 %
5	None	None ▲	0 %
6	None	None ▲	0 %
7	None	None ▲	0 %
8	None	None ▲	0 %

The modulation matrix allows you to dynamically change Go2 parameters, using both internal modules such as envelopes and LFOs, and external MIDI controllers such as pitch bend, aftertouch and other control messages defined in the MIDI-standard.

Access the matrix by clicking on the MOD label.

With the modulation screen open, you see 8 modulation matrix slots. The Slot column lets you turn individual modulation paths On and Off by clicking on the slot number. A slot in bypass mode is displayed in grey.

The source column gives you access to all modulation sources.

The destination column lists which parameter is affected by changes in the modulation source. You can set the modulation destination by picking up the triangle and dropping it on the modulation target control (Click – Drag – Drop)

In the Amount column, you define the modulation strength for each modulation slot. It sets the level of impact that the modulation source has on its destination or target. It speaks for itself that depending on the selected source and the amount the effect ranges from subtle variations to outrageous manipulation. The amount control displays its value relative to its destination as a percentage. As an example, a modulation amount of 25% represents a quarter of the total parameter range, in a positive direction.

The Command Button opens the Mod Matrix command menu. It contains shortcuts to clear, bypass and reset the modulation settings.

# FX SECTION



Go2 has three effect units, a Chorus, a Flanger / Phaser and a Delay / Reverb. You can turn each of these effects On and Off individually, and select between the Flanger or Phaser, and the Delay or Reverb.

The FX units are connected in series, so the sound passes through the Chorus first, then the Flanger / Phaser and finally the Delay / Reverb.

The Bypass button bypasses all the effects.

The Mix dial sets the balance between the original signal and the processed signal. In the fully counter-clockwise position you'll hear the dry signal only. In the fully clockwise position only the effect signal is audible.

## Chorus

The chorus effect combines the original signal with one or more copies of the input. All copies are slightly delayed. The effect simulates multiple players playing the same music. In practice, it creates a richer sound. An LFO is used to modulate the delay time(s)

<i>Length</i>	Length sets the delay time used to create the Chorus effect
<i>Width</i>	Width sets the maximum modulation amount of the delay time (length)
<i>Speed</i>	Speed sets the frequency of the LFO that drives the delay time modulation.
<i>LP Filter</i>	LP Filter sets the low pass filter frequency applied to the chorus effect.
<i>HP Filter</i>	HP Filter sets the high pass filter frequency applied to the chorus effect.

## Flanger

The Flanger effect is created by creating two copies of the sound source with one of these subject to a very short modulated delay. In contrast with the chorus effect, the delay time is even shorter. The result is an enriched signal with comb filter characteristics. It is sometimes described as a whooshing sound.

<i>Length</i>	Length sets the delay time used to create the flanger effect
<i>Width</i>	Width sets the maximum modulation amount of the delay time (length)
<i>Speed</i>	Speed sets the frequency of the LFO that drives the delay time modulation.
<i>Feedback</i>	Feedback determines how much of the delayed signal is fed back to its input. In the context of the Flanger effect, increased feedback creates a more pronounced effect with a high level of resonance peaks.
<i>Pan Mod</i>	Pan Mod sets the amount of panning modulation

## Phaser

A phaser uses several comb filters that create moving peaks and troughs in the frequency spectrum. It gives the effect of continuous movement in the sound.

<i>Spread</i>	Spread sets the extent to which the individual comb filters are distributed across the frequency spectrum
<i>Feedback</i>	Feedback determines how much of the phased signal is fed back to its input
<i>Width</i>	Width sets the maximum amount of modulation of the filters
<i>Speed</i>	Speed determines how fast the filters move through the frequency spectrum
<i>Pan Mod</i>	Pan Mod sets the amount of panning modulation

## Stereo Delay

The stereo delay is made up of two tempo-based delays. The Tape Delay creates its delay effect by emulating the characteristics of an echo effect created by an analogue tape delay. Each of the audio channels (Left and Right) uses its own delay line. This effect type is useful for making deep pad sounds if you use different delay times for left and right, e.g. 1/8\* (Left) and 1/4 (right).

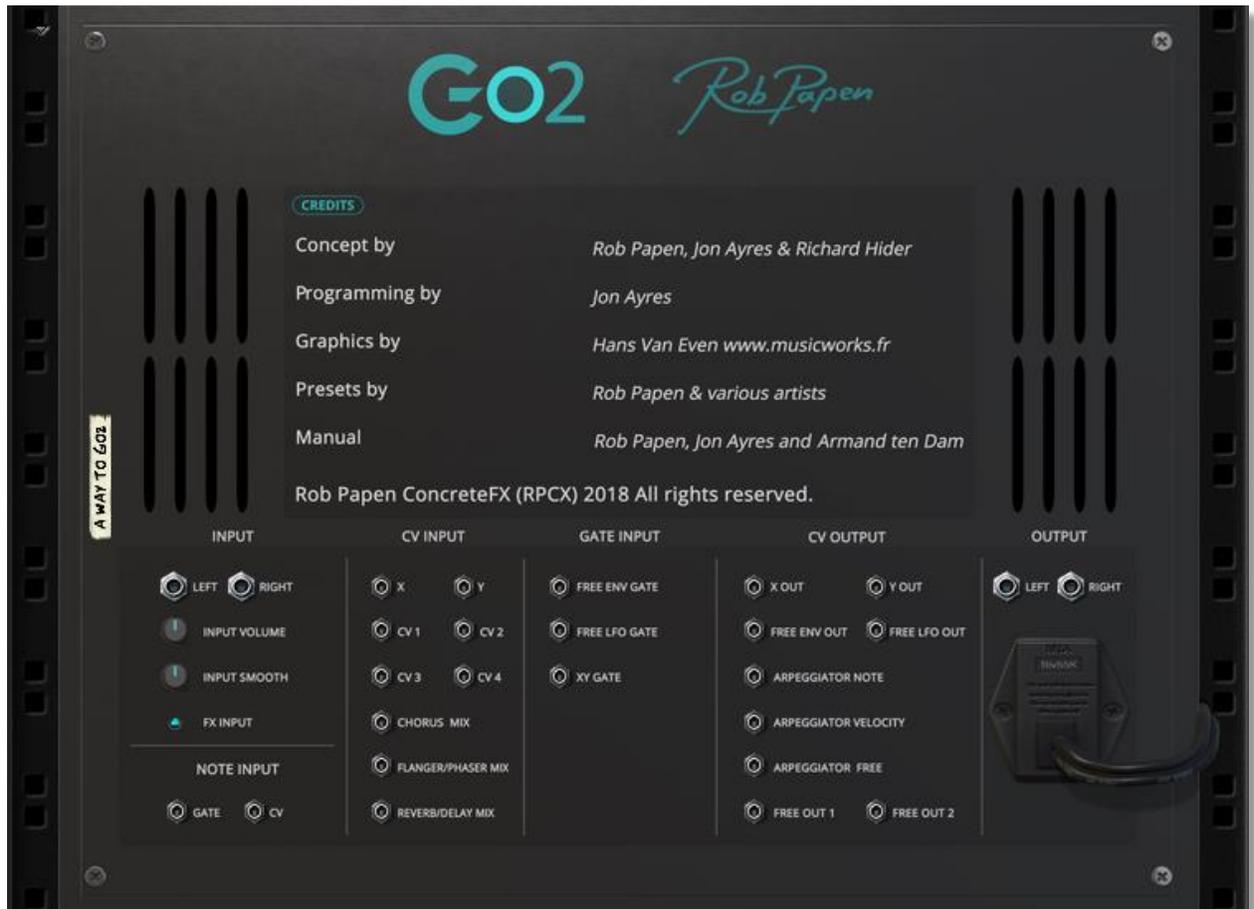
<i>Left Delay</i>	Left Delay sets the delay time in musical note values for the left channel.
<i>Right Delay</i>	Right Delay sets the delay time in musical note values for the right channel.
<i>Sync</i>	Switches the delay settings between tempo-based and time-based
<i>Feedback</i>	Feedback determines how much of the delayed signal is fed back to its input. It is useful for creating dense delay patterns.
<i>LP Filter</i>	The LP Filter applies a low-pass filter to the delayed signal. The control sets the filter frequency. Use it in combination with the feedback control
<i>HP Filter</i>	The HP Filter reduces the low frequency content in the delayed signal. The control sets the filter frequency. Use it to take out some of the woolliness of the delayed signal.

## Reverb

This effect reproduces the sound of acoustics in rooms using different sizes and reflections.

<i>Pre-Delay</i>	Pre-delay determines the time it takes for the first reverb reflections to appear
<i>Size</i>	The Size control represents the size of the reverberation room.
<i>Length</i>	Length sets the duration of the reverb
<i>Damp</i>	The Damping control sets the amount of low-pass filtering applied to the early reflections of the reverb signal
<i>HP Filter</i>	The high pass filter is applied to the overall reverb signal. The control sets the filter frequency. Use it when the input signal contains many low frequencies and the reverb signal becomes boomy.

# BACK PANEL



On Go2's back panel you will find various inputs and outputs for Control Voltage and Audio.

## Input

External audio signal can be fed into Go2 through the Left and Right inputs. The audio can be used as modulation sources, with mod input smoothing to create a more gentler modulation signal.

You can also route incoming audio straight to Go2's effects section. The Input Volume dial is used to set the right input level for the effects.

## Note Input

The Note input CV and Gate connectors enable Go2 to be controlled by external Reason modules.

## **CV Input**

Go2 accepts a multitude of external modulation sources through the CV input block. It has 4 CV inputs for use in the modulation matrix, inputs to drive the XY position of the XY Pad and three inputs to control the effect mix for Chorus, Flanger / Phaser and Reverb / Delay.

## **Gate Input**

Go2 has three gate inputs to reset the Free Envelope, the LFO and the XYpad.

## **CV Output**

The Go2 CV outputs can be used to apply Go2's modulation signals as modulation sources for other Reason instruments or effect racks. At your disposal are: the free envelope / LFO, the arpeggiator pitch and velocity, free outputs (which can be set to any values via the modulation matrix), and the X and Y values of the XY Pad.

## **Output**

The Output section presents Go2's final output in stereo on separate Left and Right connectors.

## APPENDIX – MODULATION SOURCES

Source	Notes
<i>Mod Wheel</i>	Modulation-wheel
<i>Mod/After</i>	Modulation-wheel or aftertouch
<i>Aftertouch</i>	Channel aftertouch
<i>Poly After</i>	Poly aftertouch
<i>Velocity</i>	Note velocity
<i>Pitchbend</i>	Midi Pitch Bend
<i>Breath</i>	Breath Controller
<i>Expression</i>	
<i>Sustain</i>	
<i>Note</i>	Note number. The modulation value is the MIDI note number divided by 127. The range is 0 – 1
<i>Centre Note</i>	Distance from base notes (midi note 57) in octaves. Midi note 45 is -1 and midi note 69 is + 1 and so on.
<i>Note Random 1</i>	Random number generated when you play a note. The range is -1 – 1
<i>Note Random 2</i>	
<i>UniPolar Note Random 1</i>	Unipolar Random number generated when you play a note. The range is 0 – 1
<i>UniPolar Note Random 2</i>	
<i>Offset</i>	Constant offset.
<i>White Noise</i>	White noise modulation. The range is -1 – 1
<i>UniPolar White Noise</i>	Unipolar white noise modulation. The range is 0 – 1.
<i>Free Envelope</i>	Free Envelope.
<i>Filter Envelope</i>	Filter Envelope.
<i>Free LFO</i>	Free LFO, The range is -1 – 1.
<i>UniPolar LFO</i>	Unipolar Free LFO. The range is 0 – 1.
<i>SMod LFO</i>	The LFO used by Symmetry modulation. It is a sine wave which works as a Poly LFO (i.e. by voice) The range is -1 – 1.
<i>UniPolar SMod LFO</i>	Same as the SMOD LFO, but the range is 0 – 1..

<i>Arp Velocity</i>	Velocity of current Arp step.
<i>Arp Free</i>	Free value of current Arp step.
<i>XY X</i>	Current XY X's position. The range is -1 – 1.
<i>UniPolar XY X</i>	Current XY Unipolar X's position. The range is 0 – 1.
<i>XY Y</i>	Current XY Y's position The range is -1 – 1.
<i>UniPolar XY Y</i>	Current XY Unipolar Y's position. The range is 0 – 1.
<i>XY Distance</i>	Distance of current XY position from the centre of the XY Pad
<i>CV 1 to 4</i>	CV Input 1 to 4 (Back panel)

## APPENDIX – MODULATION DESTINATIONS

Category	Destination
	<i>None</i>
<b>Global Controls</b>	<i>Portamento Amount</i>
	<i>Global Tune</i>
	<i>Arp Speed</i>
	<i>Arp Swing</i>
	<i>Arp Velocity / Key</i>
<b>Unison Controls – for the following Modulation Destinations, Unison 2-4 refers to unison voices 2 to 4, Unison 2 refers to unison voice 2 and so on.</b>	<i>Unison Detune</i>
	<i>Unison Spread</i>
	<i>Unison Semi 2-4</i>
	<i>Unison Semi 2</i>
	<i>Unison Semi 3</i>
	<i>Unison Semi 4</i>
	<i>Unison Fine 2-4</i>
	<i>Unison Fine 2</i>
	<i>Unison Fine 3</i>
	<i>Unison Fine 4</i>
	<i>Unison Volume 2-4</i>
	<i>Unison Volume 2</i>
	<i>Unison Volume 3</i>
	<i>Unison Volume 4</i>
	<i>Unison Pan 2-4</i>
	<i>Unison Pan 2</i>
	<i>Unison Pan 3</i>
	<i>Unison Pan 4</i>
	<i>Unison Morph 2-4</i>
	<i>Unison Morph 2</i>

	<i>Unison Morph 3</i>
	<i>Unison Morph 4</i>
	<i>Unison Main Filter Frequency 2 - 4</i>
	<i>Unison Main Filter Frequency 2</i>
	<i>Unison Main Filter Frequency 3</i>
	<i>Unison Main Filter Frequency 4</i>
<b>Oscillator Controls</b>	<i>Osc Morph</i>
	<i>Osc Semi-tune</i>
	<i>Osc Fine-Tune</i>
	<i>Osc Symmetry</i>
	<i>Osc Smod Amount</i>
	<i>Osc Smod Speed</i>
	<i>Osc Sub Osc Volume</i>
	<i>Osc Sub Osc Pitch</i>
	<i>Osc Spread</i>
	<i>Osc Up Spread Semi</i>
	<i>Osc Up Spread Fine</i>
<b>Filter Controls</b>	<i>Filter Frequency</i>
	<i>Filter Q</i>
<b>Filter Envelope Controls</b>	<i>Filter Envelope Amount</i>
	<i>Filter Envelope Speed</i>
	<i>Filter Envelope Attack</i>
	<i>Filter Envelope Decay</i>
	<i>Filter Envelope Sustain</i>
	<i>Filter Envelope Release</i>
<b>High Pass Filter Controls</b>	<i>Highpass Filter Frequency</i>
	<i>Highpass Filter Q</i>
<b>Amp Controls</b>	<i>Main Volume</i>
	<i>Main Pan</i>
	<i>Amp Envelope Speed</i>
	<i>Amp Envelope Attack</i>

	<i>Amp Envelope Decay</i>
	<i>Amp Envelope Sustain</i>
	<i>Amp Envelope Release</i>
	<i>Distort Amount</i>
<b>Free LFO Controls</b>	<i>Free Lfo Speed</i>
<b>Free Envelope Controls</b>	<i>Free Envelope Speed</i>
	<i>Free Envelope Attack</i>
	<i>Free Envelope Decay</i>
	<i>Free Envelope Sustain</i>
	<i>Free Envelope Fade</i>
	<i>Free Envelope Release</i>
<b>Free Modulation Amount Controls</b>	<i>Free Mod 1 Amount</i>
	<i>Free Mod 2 Amount</i>
	<i>Free Mod 3 Amount</i>
	<i>Free Mod 4 Amount</i>
	<i>Free Mod 5 Amount</i>
	<i>Free Mod 6 Amount</i>
<b>XY Controls</b>	<i>XY Speed</i>
	<i>XY Smooth</i>
	<i>XY X To Free 1</i>
	<i>XY Y To Free 1</i>
	<i>XY X To Free 2</i>
	<i>XY Y To Free 2</i>
	<i>XY X To Morph</i>
	<i>XY Y To Morph</i>
<b>Chorus Controls</b>	<i>Chorus Length</i>
	<i>Chorus Width</i>
	<i>Chorus Speed</i>
	<i>Chorus LP</i>
	<i>Chorus HP</i>
	<i>Chorus Mix</i>

<b>Flanger Controls</b>	<i>Flanger Length</i>
	<i>Flanger Width</i>
	<i>Flanger Speed</i>
	<i>Flanger Feedback</i>
	<i>Flanger Pan Mod</i>
	<i>Flanger Mix</i>
<b>Phaser Controls</b>	<i>Phaser Pitch</i>
	<i>Phaser Feedback</i>
	<i>Phaser Width</i>
	<i>Phaser Speed</i>
	<i>Phaser Pan Mod</i>
	<i>Phaser Mix</i>
<b>Delay Controls</b>	<i>Delay Left Length</i>
	<i>Delay Right Length</i>
	<i>Delay Length</i>
	<i>Delay Fine Length</i>
	<i>Delay Feedback</i>
	<i>Delay LP</i>
	<i>Delay HP</i>
	<i>Delay Mix</i>
<b>Reverb Controls</b>	<i>Reverb Pre-Delay</i>
	<i>Reverb Size</i>
	<i>Reverb Length</i>
	<i>Reverb Damp</i>
	<i>Reverb HP</i>
	<i>Reverb Mix</i>
<b>CV Controls</b>	<i>CV Out 1</i>
	<i>CV Out 2</i>