

# Taiga Patch Book Taiga Desktop Electronic Musical Instrument Patch Book V1.0.1

# **1 Patch Examples**

### 1.1 Patch Book Overview:

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This Patch Book is a guide exploring the functionality of Taiga. It is not meant to be a collection of presets. The examples are designed to showcase the functionality of each module within the instrument using the simplest patch possible. This ensures that the patches are less confusing and keeps the focus of the patch on the highlighted function.

It is strongly recommended that you read the corresponding section of the manual as you work through the Patch Book. This will ensure you are able to get the most out of Taiga in the future.

## 2 Default Patch Example



### 2.1 DEFAULT PATCH

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This patch should provide sound and is an excellent starting point for deeper exploration. Let's start from the left and work our way to the right. Patch the output directly into the outputs marked in red. You should hear a sound out of every one of them.

First the oscillator sine and shape outputs. These outputs provide a constant tone. The sine wave is not affected by the **[Shape Knob].** The waveform sent to the **[Out Jack]** can be selected using the [Seed Button] and manipulated using the corresponding **[Shape Knob].** 

The mixer offers 2 outputs allowing the mixer to function as a singe 5 channel mixer or as a pair of independent 2 and 3 channel mixers. Patch into the **[Mix Output Jack]** to hear the sum of channels 1 through 5 or 3 through 5. Patch into **[1+2 Output Jack]** to hear the sum of Mixer channels 1 and 2. Patching into the **[1+2 Output Jack]** removes channel 1 and 2 from the **[Mix Output Jack]**. These outputs provide a constant tone in the default patch.

The output of the filter is controlled by the **[Filter Frequency Knob]** and frequency CV knobs. The **[Freq CV 2 Knob]** is an attenuverter meaning it is off in the 12 o'clock position. Turning to the left adds negative modulation and turning to the right adds positive modulation. This can often be the cause of Taiga not making sound. The filter output provides a constant tone in the default patch.

The Dynamics section of Taiga functions as the VCA, managing amplitude in VCA mode and both amplitude and harmonics in LPG mode. The **[Dynamics Output Jack]** provides a tone when the **[Dynamics Knob]** is turned up or a note is played. In normal operation, the **[Dynamics Knob]** should be left full left to ensure the sound fully stops after a note is finished playing.

The **[Echos Out Jack]** provides a tone when the **[Dynamics Knob]** is turned up or a note is played.

The [Main Out Jack] provides a tone when the [Dynamics Knob] is turned up or a note is played.

## **3 Control Patch Examples**



### 3.1 Oscillator MIDI Control and Free Running Mode

The pitch of Taiga Oscillators is controlled using 2 modes. Midi and free running. **Enable or disable the MIDI Mode mode by pressing and holding the [Edit Button] then pressing the** [Seed Button].

Experiment with the different modes by listening to each oscillator and the range available when MIDI response is enabled and disabled.

When MIDI response is enabled, the oscillators respond to MIDI pitch information. Incoming midi notes set the pitch of all MIDI enabled oscillators. The Control module **[Octave Up Button]** and **[Octave Down Button]** can be used to shift the octave of all MIDI enabled oscillators.

The pitch range of each oscillator is slightly different. **[Osc 1 Pitch Knob]** range is limited to fine tuning. **[Osc 2 Pitch Knob]** range offers a little over an octave in either direction. **[Osc 3 Pitch Knob]** range offers a little over two octaves in either direction.

When MIDI response is disabled, the oscillators do not respond to MIDI pitch information or the **[Octave Up Button]** and **[Octave Down Button]**.

The **[Osc Pitch Knob]** range changes to a full frequency sweep range control. Left of 12 o'clock is LFO range and right of 12 o'clock is audio rate oscillator range.

Oscillator MIDI Control is outlined in section 6.2 of the manual.

## **3 Control Patch Examples**



### 3.2 Paraphonic Taiga

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Setup Taiga to play 2 notes simultaneously while maintaining a monophonic filter and monophonic Dynamics signal path. This is not a perfect solution or a replacement for true polyphony. Many hardware compromises limit the functionality but if you want to play 2 notes at the same time, Paraphonic Mode can do that.

Patch the [Velocity Output Jack] into the [Pitch] input of one of the oscillators. This patch cable will send the selected oscillator the offset voltage necessary to play the second note. Any of the 3 oscillators can be used. Make sure MIDI control is enabled for the selected oscillator. Oscillator MIDI Control is outlined in section 6.2 of the manual.

Set the Velocity Mode mode by pressing and holding the [Edit Button] then pressing the [Arpeggiator Button] to cycle through the 5 options. Press once to check current option. Press again to advance through the available options. Select the Saw Wave for Paraphonic Mode. The velocity mode can only be changed when arpeggiator mode is NOT active.

The Pseudo-Random Shift Register Modes are worth experimenting with as well. Perfect clocked random source for pitch, filter cutoff, oscillator shape, etc...

#### Velocity Output Options

Pseudo-Random Shift Register Mode (most chance)
 Pseudo-Random Shift Register Mode (more chance)
 Pseudo-Random Shift Register Mode (small chance)
 2 Voice Paraphonic Mode

(All LEDs Off) MIDI Note Velocity 0v to 5v Output

Paraphonic calibration procedure is outlined in section 15 of the manual.

## **3 Control Examples**



### 3.3 Using the Multi-Function Tools with a MIDI Controller

The Multi-Function Tool is a digital voltage generator with four modes that controls the **[Control CC/Mod Output Jack]**. MIDI CC/Mod Wheel, Triangle LFO, Decay Envelope, or Clock Sync'd Random Voltage. **Press [Edit Button] then press the [Octave Down Button] to cycle between modes.** Press once to check current mode. Press again to advance through the available options. **The multi-function tool mode can only be changed when arpeggiator mode is NOT active. Function details are outlined in section 5.25 of the manual**.

#### **Multi-Function Tool Output Options**

Random Voltage (assigned MIDI CC sets randomness) Decay Envelope (assigned MIDI CC sets decay time) Clock Sync'd Triangle LFO (assigned MIDI CC sets clock division) Assigned MIDI CC/Mod Wheel 0v to 5v Output

For testing purposes, patch the [Control CC/Mod Output Jack] into the [Filter Frequency CV 1 Input Jack]. Adjust the MIDI controller Mod Wheel or selected CC controller to modify the output. Test each function by listening to the output of the filter. The Multi-Function tool is perfect clocked LFO, random, and triggered decay envelope source for pitch, filter cutoff, oscillator shape, etc...

Selecting active MIDI CC source is outlined in section 5.26 of the manual.

### **3 Control Examples**



#### 3.4 Programming the Arpeggiator THREE Different Ways

Arpeggiator mode outputs a monophonic pitch and gate signal. Arpeggios up to 32 notes with velocity are available. Make sure the oscillators in the audio patch have MIDI control enabled. The arpeggiator pitch is sent to the oscillators via MIDI. Enable arpeggiator mode by pressing the [ARP Button].

Entering an arpeggiated sequence using standard arpeggiator input method. Press and hold a few keys on a MIDI keyboard. The arpeggiator will cycle through the depressed keys in the order they were pressed. Playing the notes in this order is sometimes called "as played". To stop the arpeggiated sequence, release one or all of the depressed keys. Enable the hold function by pressing the [Hold Button]. The Hold function allows the arpeggiator to cycle through the last set of selected notes after the selected notes have been released. Disable the Hold function by pressing the [Hold Button].

Entering an arpeggiated sequence using the note sequencing method. Press and hold the [Edit Button]. Press keys on a MIDI keyboard one at a time to create a sequence of up to 32 steps. Press and hold the [Edit Button], press the [Octave Up Button] to add a rest. This note sequencing method automatically enables hold mode. To stop the arpeggiated sequence, press the [Hold Button].

The arpeggiator can do quite a bit more! **Detailed arpeggiator settings are outlined in** sections 5.14-5.20 of the manual.

#### RANDOM SEQUENCE FUN!! RANDOM SEQUENCE FUN!!!

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Generate a randomized sequence by pressing the [ARP Button] to enable Arpeggiator mode. Next, press and hold the [Edit Button] then press the [Hold Button]. This will generate a sequence with a random length (1-32 steps), pseudo-random pitch values, and random velocities. The key of the sequence is based on the last incoming MIDI note. If no MIDI note has been played, the sequence will based on the key of C. The notes of the sequence should mostly stick to the selected key. Major or minor will be randomly chosen. Randomized sequences can include rests.

## **4 Oscillator Patch Examples**



#### 4.1 Oscillator Overview

The Taiga oscillators have a wide range of sonic possibilities but there are a few rules to controlling them.

The [Shape Knob] and [Shape CV Knob] work together to determine the shape of the waveform. The [Shape Knob] manually adjusts the shape of the selected waveform. The [Shape CV Knob] sets the level of voltage control over the shape of the waveform. When using the [Shape CV Knob], the [Shape Knob] acts like the offset or starting point for the incoming CV. The LFO triangle wave is internally connected to the [Shape CV Input Jack]. Set the range of the LFO by pressing and holding the [(Edit/Arp Note) Button] and the [Filter Mode Button].

The [Seed Button] assigns the active waveform. Each waveform except for the Pulse wave has a warped version. The warped version of the wave is active when the LED below the selected waveform is also lit. When Pulse and Sine LEDs are lit, both pulse and sine waves are active.

#### **Seed Waveform Options**

Sine Wave [Sine LED]
 Warped Sine Wave [Sine and Triangle LED]

 Triangle Wave [Triangle LED]
 Warped Triangle Wave [Triangle and Saw LED]
 Saw Wave [Saw LED]
 Warped Saw Wave [Saw and Pulse LED]

 Pulse Wave [Pulse LED]
 Sine and Pulse Wave [Sine and Pulse LED]
 Randomly Selected Waveform [All LEDs ON]

## **4 Oscillator Patch Examples**



### 4.2 Oscillator Self Modulation

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This is a fun patch that can get out of hand quickly. The oscillator **[FM Input Jack]** is internally connected to the **[Triangle Output Jack]** of the LFO. Turning the **[FM Knob]** sets the amount of linear oscillator frequency modulation. **Patch the [Oscillator Out Jack] into the [FM Input Jack]. Slowly adjust the oscillator [FM Knob].** This opens up a world of chaotic infighting between the oscillator and itself for control over the frequency. Repeat this patch with the other 2 oscillators and Taiga turns into an unstable, rumbling beast.

The **[FM Input Jack]** is linear. Exponential FM is available using the **[Pitch Input Jack]**. Exponential FM typically has a stronger effect on the sound. An attenuated, exponential FM patch is available in the Mixer section of this Patch Guide.

More info about the oscillator core is available in section 6.5 of the manual.

## **4 Oscillator Patch Examples**



#### 4.3 Multi-Oscillator Modulation Loop

Build this patch in 2 steps. **Start by patching [Oscillator 1 Output Jack] into the [Oscillator 2 FM Input Jack]. Patch [Oscillator 2 Output Jack] into the [Oscillator 1 FM Input Jack].** This creates a frequency modulation feedback look where adjusting the frequency or FM of one oscillator will affect the frequency of the other oscillator and in turn affect the frequency of itself beyond the range of the knob change. This patch showcases the power of modular synthesis in creating sonic systems that feel alive by responding in unexpected ways.

Patch the [Sine Wave Output Jack] of the first oscillator to the [Sync Input Jack] of the second oscillator. The oscillators have been designed to sync to just about any external signal and do not require a square or pulse wave for hard sync. Adding sync to the patch pushes the interplay between oscillators a step further. Explore this by adjusting the FM and Pitch knobs of each oscillator.

This patch can be expanded to include a third oscillator in the loop. Patch the [Oscillator 1 Output Jack] into the [Oscillator 2 FM Input Jack]. Patch the [Oscillator 2 Output Jack] into the [Oscillator 3 FM Input Jack]. Patch the [Oscillator 3 Output Jack] into the [Oscillator 1 FM Input Jack]. Spend some time with the FM and Pitch knobs then add sync between a few of the oscillators.

More info about the oscillator core is available in section 6.5 of the manual.

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### 5.1 Internal Routings and How to Patch Over Them

Taiga uses switched jacks to internally route signals to provide a playable instrument without the need for patch cables. These internal connections can be patched over to reroute the different parts of the instrument. This patch is a good example of what can be accomplished with just a few patch cables.

Start by patching [Oscillator 1 Sine Jack] into the [Mixer Channel 2 Input Jack]. This replaces the second oscillator in the mixer and replaces it with a clean sine wave from Oscillator 1.

This patch also frees up Oscillator 2 for LFO duties. **Disable MIDI control of Oscillator 2 by** pressing and holding the [(Edit/Arp Note) Button] and the [Oscillator 2 Seed Button]. The output of oscillator 2 can be used as a free running modulation source.

The Taiga mixer is actually 2 mixers. The sum of channels 1 and 2 is internally routed to the mix output of channels 3, 4, and the preamp. Patching the [Mixer 1 + 2 Output Jack] removes it from the [Mixer Mix Output Jack]. Patch [Mixer 1 + 2 Output Jack] into the [Preamp Input Jack] and adjust the [Preamp Level Knob] and [Preamp Gain Knob] to taste. This one patch cable reroutes channel 1 and 2 from the mixer output and instead passes them through the preamp to add overdrive to the mix of channel 1 and channel 2. The output of the preamp is internally routed to the [Mixer Mix Output Jack].

More info about the dual mixer is available in section 7.1 of the manual.



#### 5.2 Splitting the Mixer for Exponential FM

The dual mixer can be used for both audio and CV signals. This patch show how to use the Channel 1 and 2 mixer as a CV attenuator while using Channels 3, 4 and the Preamp for audio.

Patch [LFO Triangle Output Jack] into the [Mixer Channel 1 Input Jack]. This routes the LFO into Channel 1 of the mixer to be attenuated using the [Mixer Channel 1 Knob]. Patch [Mixer 1+2 Output Jack] into the [Oscillator 1 Pitch Input Jack]. The oscillator pitch input is exponential so extreme FM is possible. Patch [Oscillator 1 Output Jack] into the [Mixer Channel 4 Input Jack]. Adjust the Mixer Channel 4 Knob to set the level of oscillator 1.

More info about the dual mixer is available in section 7.1 of the manual.



### 5.3 Feedback Mixer

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The Preamp can be used to amplify external signals, overdrive internal signals, and to create feedback loops within Taiga.

**Patch [Echos Output Jack] into the [Preamp Input Jack]**. Experiment with the delay time and regeneration of the delay along with the gain of the preamp.

Any output downstream of the mixer can be used to create a feedback loop. Filter output, dynamics output, and headphones output will all provide different results.

More info about the dual mixer is available in section 7.1 of the manual. More info about the echos delay is available in section 12 of the manual.



#### 5.3 Using the Mixer to Bypass the Filter

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The mixer can be used to mix both filtered and unfiltered oscillators. This is a great way to create more complex sounds.

Patch [Mixer 1+2 Output Jack] into the [Filter Input Jack]. Channels 1 and 2 of the mixer are now sent directly to the filter. Patch [Filter Output Jack] into the [Mixer Channel 4 Input Jack]. Channel 3 and 4 of the mixer are used to mix the filtered oscillators with the unfiltered oscillator 3. Patch [Mixer Mix Output Jack] into the [Dynamics Input Jack].

This patch has a lot of areas worth exploring. One example is to experiment with using filter and ADSR 1 to blend the filtered and unfiltered signals differently over time. A long attack on ADSR 1 allows the unfiltered oscillator to be heard before the filtered oscillators.

More info about the dual mixer is available in section 7.1 of the manual.

### **6 Filter Patch Examples**



#### 6.1 The Filter is Full of Sounds

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No patch cables are needed for this patch but it offers a lot of sonic possibilities. The PGH Filter module is a voltage controlled, analog, 2 pole, 12db state variable filter. State variable topology offers several filter output responses, highpass, bandpass, lowpass, and notch. Select a filter response using the **[Filter Mode Button]**. Each response produces a very smooth and natural sounding sweep.

#### **Filter Response Options**

1. Lowpass Filter	[Lowpass LED]
2. Lowpass + Bandpass Filter	[Lowpass and Bandpass LED]
3. Bandpass Filter	[Bandpass LED]
4. Bandpass + Highpass Filter	[Bandpass and Highpass LED]
5. Highpass Filter	[Highpass LED]
6. Lowpass + Highpass Filter (Notch Filte	er) [Lowpass and Highpass LED]
7. Random Filter Response [All LEDs ON]	

Listen to the difference of each response option using different waveforms and ADSR settings to understand the depth of possibilities available.

More info about the PGH Filter is available in section 9 of the manual.

### **6 Filter Patch Examples**



### 6.2 Filter Frequency Sweep Offset and More!

No patch cables are needed for most of this patch but it covers an important topic. The frequency of the filter is controlled by 3 knobs. [Filter Frequency Knob], [Filter Freq CV 1 Knob], and [Filter Freq CV 2 Knob]. The [Filter Freq CV 1 Knob] provides manual control over the cutoff frequency of the filter. [Filter Freq CV 1 Knob] is an attenuator internally connected to the LFO and [Filter Freq CV 1 Knob] is an attenuverter internally connected to the output of ADSR 1.

When using one or both of the CV inputs, the **[Filter Frequency Knob]** becomes an offset, or starting point for the incoming control voltages. Experiment with the balance between knobs to create different sounds.

**c** Make sure MIDI control is turned off for oscillator 3. Experiment with audio rate filter modulation. Try using the other waveforms available from oscillator 3 with and without MIDI control.

More info about the PGH Filter is available in section 9 of the manual.

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## 7 ADSR Patch Examples



#### 7.1 The Secret Life of ADSRs

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ADSRs are the unsung heroes of synthesis and don't get the love they deserve. This page is meant to send some love their way.

Seriously. The ADSR plays an important role in determining the overall sound and feel of an instrument by shaping the control voltages over a period of time that manage the filter response and amplifier level of a synthesizer. Our analog envelopes are designed to be snappy and percussive while leaving plenty of range for slower, evolving pads.

Here are a few examples of how to utilize the ADSR to its fullest potential.

Use the [Clock I/O Jack] to create a cycling ADSR. Patch [Clock I/O Jack] into the [ADSR Input Jack]. The ADSR will not cycle at the rate of the clock. The [LFO Square Output Jack] or oscillator pulse wave can also be used to trigger an ADSR.

Use an ADSR output as a CV source to modulate the Shape control of an oscillator. Patch [ADSR 1 Output Jack] into the [Oscillator 1 Shape Input Jack]. This syncs the modulation of the shape with the played notes.

More info about the PGH Envelope is available in section 10 of the manual.

## **8 Dynamics Patch Examples**



### 8.1 Dynamics Knob and MIDI Control

#### **Dynamics Knob Position**

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Like the [Filter Frequency Knob], the [Dynamics Knob] acts as an offset or pass-through for audio. The CV control adds to the level set by the [Dynamics Knob]. In normal operation, the [Dynamics Knob] is typically turned full left. This allows the Dynamics to fully close and turn off the audio signal.

#### MIDI Control or No MIDI Control?

MIDI control of the Dynamics section can also be a little confusing. This should clear everything up.

**MIDI Control Disabled** - This is the more typical way of using the Dynamics Controller. With MIDI control disabled, the ADSR 2 output signal is internally patched into the **[Dynamics CV Input Jack]**. This allows the ADSR 2 to control the envelope of the dynamics when in VCA, LPG, and LPG Pluck modes.

**MIDI Control Enabled** - The MIDI note on / off gate signal replaces the ADSR 2 output signal internally patched to the **[Dynamics CV Input Jack]**. This is useful when using Dynamics in LPG Pluck mode and relying on the **[Dynamics Response Knob]** to control the decay time. This also frees up ADSR 2 to be used as a dedicated modulation source elsewhere in the patch.

## **8** Dynamics Patch Examples



### 8.2 Dynamics Modes

#### VCA vs LPG vs LPG with Pluck?

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Patch [LFO Square Output Jack] into the [ADSR 2 Input Jack]. Patch [Noise Output Jack] into the [Dynamics In Jack].

**c** only affects the amplitude of the audio. As the envelope opens up the Dynamics, the sound gets louder. As the envelope closes, the sound gets quieter.

**LPG Mode** - This mode affects both amplitude and harmonic content. As the envelope opens, the sound gets louder and brighter. As the envelope closes, the sound gets quieter and darker. Resonance is also available in LPG mode.

**LPG with Pluck Mode** - This mode functions the same as LPG mode with the addition of a sharp trigger generated from the **[Dynamics CV Input Jack]** used to pluck the dynamics envelope. Turn down the **[Dynamics CV Knob]** to hear more of the pluck and fade out the CV control. Pluck mode requires the envelope, clock, or gate source have a sharp attack to trigger the pluck.

## 9 Echos Patch Examples



#### 9.1 Echos Time Travel Experiments

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Analog BBD delays are a great way to add depth and a sense of space to a patch. Here are a few patch ideas that push beyond the standard dotted 1/8 note echo effect.

Chorus-esque - Set the [Delay Time Knob] to around 8 o'clock. Patch the [LFO Triangle Output Jack] into the [Echos Time CV Input Jack]. Adjust the [Echos Time CV Knob] to add a subtle amount of movement to the delay time. Feedback can be added using the [Echos Regen Knob] for a denser effect.

Verb-ish - Set the [Delay Time Knob] full left. Set the [Echos Regen Knob] as far right as it will go before self oscillation. Adjust the [Echos Mix Knob] to taste.

Low-Fi Tape Simulator - This is a favorite. Set the [Echos Mix Knob] full right. Set the [Delay Time Knob] to around 7 o'clock. Set the [Echos Regen Knob] full left. Patch the [S&H Output Jack] into the [Echos Time CV Input Jack]. Adjust the [Echos Time CV Knob] to add a subtle amount of random movement to the delay time. This patch can be modified to use half of the mixer to mix the S&H output with the LFO Triangle wave. Longer delay times and increased modulation create a noticeable doppler effect to the pitch of the incoming audio.

## **10 Utility Patch Examples**



#### 10.1 Sample and Hold On!

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Sample and Hold is a classic analog synth circuit that can be used for much more than just a random voltage generator. It can be used to process both CV and audio and can be triggered slowly with a clock or square wave LFO or at audio rates using a square wave from an oscillator. This patch will focus on processing CV.

Build this patch one step at a time and experiment with the settings before moving on.

Patch [S&H Output Jack] into the [Oscillator 1 Pitch Input Jack]. Turn the [Dynamics Knob] full right to allow the synth to drone. This uses the sample and hold as a random positive and negative voltage generator and the pitch of the oscillator will jump around in sync with the clock of the Control section.

More info about the clock is available in section 5.8 of the manual.

Patch [LFO Triangle Output Jack] into the [Sample Input Jack]. The triangle wave of the LFO now replaces noise as the sample source of the sample and hold. The frequency of the oscillator will follow a stepped triangle shape matching the tempo of the clock.

Patch [Oscillator 3 Output Jack] into the [Hold Input Jack]. Make sure Oscillator 3 MIDI is disabled and the waveform is set to pulse. Oscillator 3 is now the clock source of the sample and hold and can be modulated into the audio rate.

More info about the sample and hold is available in section 8.3 of the manual.

## **10 Utility Patch Examples**



#### **10.2 Sample and Hold Downsampler**

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Sample and Hold can create a bit crushing style downsampling audio effect by using an audio signal as the source and an audio rate modulation oscillator as the hold trigger.

Patch [Oscillator 1 Sine Output Jack] into the [S&H Sample Input Jack]. Patch [S&H Output Jack] into the [Mixer Channel 1 Input Jack]. This routes oscillator 1 through the sample and hold before it gets to the mixer. Patch [Oscillator 3 Output Jack] into the [S&H Hold Input Jack]. Make sure MIDI is disabled for oscillator 3.

Experiment with the Pitch of oscillator 3 then try enabling MIDI for oscillator 3 to allow it to track pitch and notice the affect on the sound of oscillator 1.

More info about the sample and hold is available in section 8.3 of the manual.

## **10 Utility Patch Examples**



#### **10.2 Sample and Hold Downsampler**

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Sample and Hold can create a bit crushing style downsampling audio effect by using an audio signal as the source and an audio rate modulation oscillator as the hold trigger.

Patch [Oscillator 1 Sine Output Jack] into the [S&H Sample Input Jack]. Patch [S&H Output Jack] into the [Mixer Channel 1 Input Jack]. This routes oscillator 1 through the sample and hold before it gets to the mixer. Patch [Oscillator 3 Output Jack] into the [S&H Hold Input Jack]. Make sure MIDI is disabled for oscillator 3.

Experiment with the Pitch of oscillator 3 then try enabling MIDI for oscillator 3 to allow it to track pitch and notice the affect on the sound of oscillator 1.

More info about the sample and hold is available in section 8.3 of the manual.





# 11 Patch Sheet

















