JXSynth Manual

In this manual you will find information on each section of the JXSynth and a description on how to use each section.

The JXSynth is a VST 2.0 compatible software synthesizer.
It requires a VST 2.0 compatible host-sequencing package.

Getting Started with the JXSynth

Locate the JXSynth in the plugin list in your host-sequencing package and click on it to load the JXSynth.

Ensure the instrument is turned on and that a channel is assigned to it.

Then hit some keys on your MIDI keyboard or program a simple riff to hear the JXSynth in action.

Mouse Control

Use the Mouse to alter the knobs and buttons. When pressing and holding the **left** button on the mouse, knobs will point in the direction of the mouse. Dragging the mouse further away from the knob will increase the accuracy by which the knob will turn. When pressing and holding the **right** button on the mouse, knobs will rotate only from the vertical movement of the mouse. This is useful when you just which to nudge a knob by a small amount with out upsetting the current setting.

Try out the 30 presets provided to get a taste of what the JXSynth is capable of.

To enable parameter automation, ensure that the SYSEX messages are not filtered out in the MIDI set-up.
Parameter automation allows you to record parameter movement when you record using the JXSynth. On playback the parameters or controls will move automatically.

Contact

For enquiries use enquiries@jxplugins.co.uk

The website is at www.jxplugins.co.uk watch out for updates and up and coming products.

JXSynth Section by Section

Oscillators

The oscillators are the heart of the synth. There are two which can together can create a variety of sound.
Hint: Try moving one of the fine knobs slightly of centre. This is called Detuning.
The oscillator will respond to pitch bend MIDI messages.
Controls:
- **range** – The offset in octaves from the current note.
- **fine** – The offset in cents from the current note.
- **pw** - (Pulse Width) – The pulse width of the square wave in percent. Note that this is only changes the pulse width when the mod button is off.
- **mod** – (Pulse Width Modulation) – When the mod button is on the pulse width will be controlled by the LFO. When off the pulse width is controlled by the pw knob but also the LFO will now control Frequency Modulation.
- **type** – This button will cycle through the four different types of oscillator. From top to bottom the oscillators are, Sine wave, Triangle wave, Saw wave and Square wave. The LEDS indicate which type the oscillator is current set to. In the picture it is the square wave.
- **mod** – (General Modulation Amount) – The mod knob controls how much influence the LFO has on the modulation of the oscillator. When the mod button is off, the Pitch or Frequency of the oscillator is modulated. When the mod knob is at 100% the pitch will modulate up and down an octave. When the mod knob is at 0% no modulation occurs. When the mod button is on the mod knob controls the amount of pulse width modulation.

VCA

The VCA (Voltage Controlled Amplifier) controls the volume envelope of the sound. The VCA is based on an ADSR (Attack Decay Sustain Release) envelope model. The attack is the time in milliseconds for the volume to rise to 100% after a note has been triggered. As soon as the attack has reached 100% the volume will decay down to the sustain level. The decay knob sets the time it takes to decay. The sustain knob sets the level at which the volume will stay until the note is released. When the note is released the volume will decay down to 0%. The release knob specifies the time for the release decay.
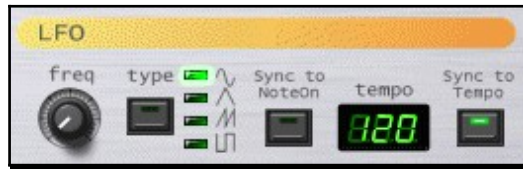The attack, decay and release knobs are all scaled logarithmically. This is to give more precision when setting small times. When setting larger times the value does need to be as accurate.

Controls:
- **attack** – Attack in milliseconds.
- **decay** – Decay in milliseconds.
- **sustain** – Sustain in percent.
- **release** – Release in milliseconds.

LFO

The LFO (Low Frequency Oscillator) is used to control the modulation of the sound. It should be first pointed out that the MIDI controller for modulation (controller 1) controls the LFO amplitude. This is common in synthesizers. However because not everyone owns a midi keyboard the LFO amplitude defaults to 100%. It will only change when the synth receives a MIDI controller 1 message.

The first control of the LFO is the freq (frequency) control. This controls the speed at which the LFO oscillates. It is special in that it has two modes according to the sync to tempo button.

The freq modes

The freq mode is controlled by the sync to tempo button.

- **Mode 1** (sync to tempo = **off**) – The frequency is set in Hz and ranges from 0.1 to 10 Hz.
- **Mode 2** (sync to tempo = **on**) – The frequency is set in beats (indicated by a X).

When in Mode 2 the LFO will sync to the tempo. Now there are an extra two modes for syncing to the tempo. These two modes are set by the sync to note button.

Sync to tempo modes

- **Mode 2a** – (sync to tempo = **on** | sync to note = **on**) – The LFO will oscillate at division of the tempo, which is set by the frequency knob. The LFO will re-trigger according to the rules set out in the sync to note control. For an explanation of how the re-triggering occurs check below in the sync to note control explanation.
- **Mode 2b** – (sync to tempo = **on** | sync to note = **off**) – The LFO will oscillate at the frequency set by the frequency knob. The LFO will now cycle exactly on the beat. The reference point for the synchronisation is the very start of the sequence. Therefore the phase of the LFO can be determined at any point of the song. This is useful for example if you are working in a 4/4 time signature and you set the frequency to x16. Then the LFO will cycle every four bars starting from the beginning. The main use for this mode is quick and simple filter sweeps, but other interesting effects can be created.

The wave type setting is exactly the same as the main oscillators.

The sync to note control

When the sync to note button is on the LFO will **re-trigger** when a **new** note occurs. When in monophonic mode (1 channel or unison mode) the re-triggering will happen on every note, however when in polyphonic mode the re-triggering will happen when a note is triggered from silence. The LFO will not re-trigger if the synth is producing output. This is because the LFO is global and not independent for each channel.

Note: Not all hosts provide support for retrieving the information required to synchronise the LFO to the tempo.
Hosts that provide support are (to my knowledge) Steinberg's Cubase VST.
Hosts that do not provide support are (to my knowledge) Emagic's Logic Audio. (It is possible to set the tempo manually in Logic Audio via the standard control editor, however Mode 2b sync will not work).

Filter

The filter is used to remove and add frequency content from the sound generated by the oscillators.

Filter limits: The cutoff frequency is limited to the range 55Hz to ¼ Sample Rate. This includes additive effects from the other controls. This limit will sometimes cause the filter to sound stuck or static, to remedy this try reducing some of the parameters.

Controls
- **cutoff** – The frequency at which the filter breaks, also known as the break frequency. Cutoff can also be controlled using MIDI controller 16.
- **resonance** – This is basically how responsive the filter is to frequencies close to the cutoff frequency. High resonance produces a high response to frequencies around the cutoff frequency.
- **env** – (Envelope Amount) – This controls the amount of influence the VCF(Voltage Controlled Filter) has on the cutoff. It can be positive ie increase the cutoff or negative ie decrease the cutoff. Central position is 0%.
- **keyb** – This controls the amount by which the filter follows the frequency of the note being played. It can be useful when the filter is very narrow and you wish to play a large range of notes. The affect is additive and will reduce the range of the cutoff.
- **type** – This controls the type of filtering used. There are four types on the JXSynth.
  - **LP | Low Pass –** Enhances Bass and removes high frequency content. The filter has a 12dB roll off per octave.
  - **HP | High Pass –** Enhances Treble and removes low frequency content. The filter has a 24dB roll off per octave.
  - **BP | Band Pass –** Enhance the frequencies around the cutoff frequency and removes any frequency content above and below this frequency. The filter has a 24dB roll off per octave.
  - **BS | Band Stop –** Removes the frequencies around the cutoff frequency. Generally not that noticeable, however with a low resonance the filter produces a phasing effect.
- **mod –** This controls the influence of the LFO on the cutoff frequency. At 100% the cutoff swings to its limits.

VCF

Exactly the same principle as the VCA Envelope except the VCF (Voltage Controlled Filter) controls the filter cutoff. Remember to set the env control in the filter to hear any effect. Also the controls for the VCF are not logarithmic but linear. This means that for example the attack at half way will be 4000 milliseconds instead of about 100 milliseconds. Because the VCF is generally not set to very small values the logarithmic accuracy is no longer needed.

Mix

The mix panel controls how the two oscillators are combined and at what amounts. Osc1 controls the volume for Oscillator 1 and the osc2 knob controls the volume for Oscillator 2. The Combine button will cycle through the two combine modes. The + mode adds the two oscillators together whereas the x mode multiplies the two oscillators together.

Note: In the multiply mode when either of the mix amounts is at 0% the resulting output will be silence. This is because and number multiplied by 0 is 0.

Volume – The volume knob controls the overall volume of the synth. At 100%, which equals 0dB, the amplitude of the synth is not attenuated. At 0% the output will be fully attenuated or silent. The volume can be controlled by MIDI (Controller 7).

Unison

Unison is a common control found on many synthesizers. When activated unison sets the synth into monophonic mode and plays the same note on every available channel. The spread control spreads the available notes around the note being played. More spread creates more harmonics. The spread effect is similar to detuning the oscillators. The result is a very rich and powerful sound.

Channels

The channels panel allows you to specify the number of available channels for the JXSynth. More channels will produce more drain on CPU power so it is recommended that you set this to the number of channels that you will actually use. For instance if you are using the synth for a bass line the channels will only really need to be set to 1 or 2.

Note: You will not notice any change in the amount of CPU drain if the synth is not playing.

Display

The display for the JXSynth is a 6 digit LED simulation. It is split into two areas the numeric display and the unit display.

The control updates all the time. It will display the value of a control if you are adjusting it. Also if you need to see the numeric value for a control simply move the mouse over the control and the display will immediately update. This means you don't have to alter the control to see its value.

Display mode

The display mode changes the numeric display mode. When display mode is on the numeric display will only display the whole integer value for the control. To see more accuracy turn the display mode off and the numeric display will now show a decimal place and as much of the fractional part of the controller as will fit on the display.

About Information

Just click on the JX Logo to view the about box.