

THE LEGEND



User's Manual - Rack Extension

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 **SYNAPSE**
AUDIO SOFTWARE
www.synapse-audio.com

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1. Introduction

Thank you for choosing The Legend by Synapse Audio!

The Legend is an analog-modeling synthesizer plug-in, faithfully recreating the most iconic synthesizer of all times.

Developed in cooperation with Bigtone Studios, The Legend marks new territory in analog modeling technology. Every component, ranging from the voltage-controlled oscillators (VCOs), voltage-controlled filter (VCF) and voltage-controlled amplifier (VCA), as well as all parts located in between, have been modeled to an accuracy never seen before in software. Even the effects originating from the power supply have been taken into account.

On top of all this, The Legend offers additional controls not found on the original hardware, greatly enhancing its already impressive feature set. The most significant additions are the Unison and Polyphonic modes, allowing for fat stereo sounds, as well as enabling polyphonic play. Built around a vectorized core, The Legend is capable of synthesizing multiple voices for the cost of little more than a single voice, making it one of the most efficient analog-modeling plug-ins available today.

2. Basic Operation

The Legend interface is divided in two pages: A front and a back panel. The front panel contains the main sound parameters of The Legend, while the back panel hosts additional settings, such as trimpots, CV connections, the pitch bend ranges and two effect processors, Delay and Reverb.

2.1. Patch Controls

The patch operation in The Legend RE is the same as in any other Reason device. To select a patch, either click on the patch name, the folder icon or the arrow buttons. To save a patch, click on the disk icon.

2.2. Controlling parameters

Knobs, faders, and numerical displays are controlled by left-clicking on them, then dragging the mouse up or down in vertical direction (see fig. 2.4). Hold down Shift while turning knobs to slow down the movement, in order to set precise values. Use Ctrl+Click to set knobs to their default position.

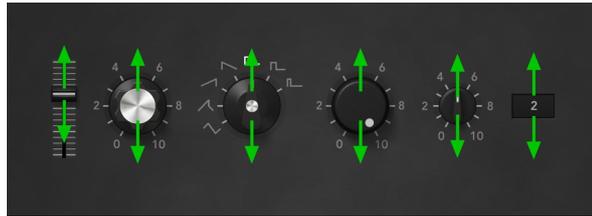


Figure 2.4. Controlling parameters

2.3. Controlling by MIDI

Most controls of The Legend can be remote controlled via MIDI. The default controller assignments follow common conventions and the MIDI standard as much as possible. To browse the complete MIDI assignments please see Appendix B: MIDI Implementation Chart.

3. Sound parameters

3.1. Overview

Fig. 3.1 shows the overall signal flow of The Legend.

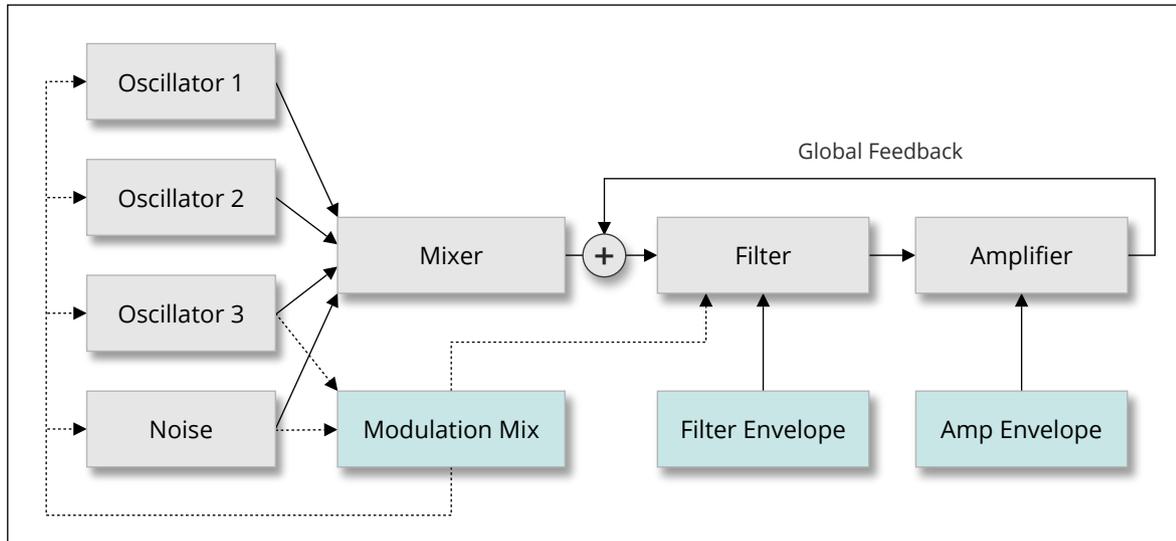


Fig. 3.1. Signal Flow of The Legend

For its sound generation, The Legend uses three oscillators and a noise generator. Those four sources are mixed and then processed by a wide range lowpass filter. The output of the filter passes through an amplifier and is finally scaled in volume by the Master Volume control.

The filter and amplifier are controlled by two envelopes, the Filter and the Amp envelope.

The Legend contains a single modulation source, which is formed by a blend of Oscillator 3 and the Noise Generator (the blend is controlled by the Modulation Mix knob). There is two Modulation targets, the filter's cutoff frequency, and the pitch of all oscillators.

3.2. Front Panel

This chapter describes all sound parameters of The Legend, from the top-left to the bottom-right.

3.2.1. Pitch Bend (PB) and Modulation Wheel (MW)



This section reflects the current state of the Pitch-Bend and Modulation Wheels, typically controlled via a MIDI controller. Note that the modulation wheel directly controls the amount of modulation in The Legend, without any routing matrix in between. Therefore, the state of the modulation wheel is saved with all patches, to ensure all presets sound just like the sound designers intended it. The maximum amount of pitch bending, as well as the maximum amount of modulation can be fine tuned on the back panel.

3.2.2. Controls



Glide

Glide is an important effect in Mono and Unison modes, where just a single voice is audible at a time. When holding down a key then pressing another new key, the voice will glide smoothly from the old pitch to the new pitch.

The Glide parameter adjusts how fast this transition takes place. When Glide is set to zero, the transition is basically instantaneous.

Mod Mix

The Legend uses a blend of oscillator 3 and the noise generator for modulation. The Modulation Mix knob controls the mix of both sources. Note that in order for modulation to be audible, the modulation wheel needs to be set to a value above zero, and either the oscillator pitch or filter must be enabled as a modulation target (see below).

OSC

When the OSC switch is turned on, modulation is enabled for the pitch of all oscillators.

FILTER

When the FILTER switch is turned on, modulation is enabled for the filter's cutoff frequency.

3.2.3. Tuning



Coarse

Adjusts the coarse tuning of the synthesizer in octaves, ranging from -2 to +2 octaves.

Fine

Adjusts the fine tuning of the synthesizer in cents. This parameter is useful to adjust the tuning to a particular range of the keyboard. Analog synthesizers based on voltage-controlled oscillators (VCOs) are usually out of tune, and this can be emulated in Legend via the back panel.

3.2.4. Output



Effects

The Effects switch enables or disables delay and reverb effects. The effect parameters can be adjusted on the back panel (cf. next chapter).

Polyphony

The Polyphony switch controls how many voices are audible in The Legend. MONO is the classic mode used by many analog synthesizers, which allows only a single note to be played at a time. Often this mode is played in a mono-legato style with glide, smoothly gliding from one note to another. UNISON is identical to MONO, except that four voices are played at the same time, for a fatter and wider sound. POLY mode allows to play up to four notes simultaneously.

Detune (Unison mode)

In Unison mode, Detune controls the detuning of the four voices.

Spread (Unison and Poly modes)

In Unison mode, Spread controls the stereo panorama of the four Legend voices played simultaneously, which allows for a very wide sound not possible with most analog hardware. In Poly mode, Spread will pan the first and third voice to the left, the second and fourth voice to the right. This is useful to give polyphonic sounds like a four-voice chord a sense of space.

Volume

Adjusts the Master Volume of the entire synthesizer.

3.2.5. Oscillators



The Legend uses three oscillators as the core of its synthesis, which produce periodic pitched tones. All oscillators share the same sound parameters explained below.

Waveform

This switch sets the waveform shape.

The available waveform shapes are (from bottom left to top right):

- Triangle
- Sharktooth
- Ramp Up
- Ramp Down
- Square
- Wide Pulse
- Narrow Pulse

Range

Adjusts the pitch of the oscillator, in octaves. The labels 32', 16', 8' etc date back to octave pitches in organ stops - in organs, they define the length of the organ pipes.

The LO setting yields a very low pitch, which can be useful either for special effects or when using oscillator 3 as a modulation source.

Semi

Adjusts the pitch of the oscillator in semitones, the range is +/- 7 semitones.

Fine

Detuning two or three oscillators often result in a rich sound. While this can be accomplished with the SEMI knob, its fairly wide range is a problem when precision is desired. This is where the FINE knob comes in, it allows for small adjustments within only a semitone (+/- 50 cents). Note that a yet higher tuning precision can be obtained by holding down Shift while turning the knob with the mouse.

On/Off

Enables or disables the oscillator.

Keytrack

Oscillator 3 has an extra switch to enable or disable key tracking. Disabling key tracking means that the oscillator will not react to MIDI notes played, i.e. the oscillator will maintain a steady pitch. This is particularly useful when using oscillator 3 in LO mode as a modulator to produce vibrato effects.

3.2.6. Mixer



The Mixer section contains the controls to mix the sound source in The Legend. Sound sources include the three oscillators, as well as a noise generator.

Volume

Controls the volume of oscillators 1, 2 and 3.

Noise

Adjusts the volume of the noise generator. A switch just above the knob allows to switch between WHITE and PINK noise. White noise is a type of noise that has a largely flat spectrum, i.e. bass, mid and treble frequencies have equal magnitude. Pink Noise is similar to white noise, except that treble frequencies are attenuated, giving the noise a different character. Note that Noise is a modulation source in The Legend as well. Its shape is different from the audible noise, however: High frequencies are further attenuated to produce a musically more pleasing result.

Drive

After all sound sources have been mixed, the composite signal is sent to the filter. The Drive knob adjusts the level of the signal going into the filter. This is an important parameter for the overall sound character, since the filter saturates or even distorts the signal at higher Drive levels. Note that even a low Drive setting can result in audible saturation, if all three oscillators are active. In cases where this is not desirable, simply lower the oscillator volumes.

Feedback

Some vintage synthesizers have a jack which mixes external sources to the filter input. This feature can be used to route the master output back to the filter input, creating a feedback loop that way. The results can be interesting and range from subtle saturation effects to chaos. The Feedback knob in The Legend emulates this classic feedback loop, and allows to control the amount of the output signal being fed back to the input. When set to zero, there is no feedback.

3.2.7. Filter



After all sound sources have been mixed, the composite signal is sent to the filter section. The raw composite signal coming from the mixer section is typically too bright to be useful, especially when ramp or pulse waveforms are chosen. Most common sounds have a much darker timbre, and this is where the filter section comes in. The Legend comes with a low- and a bandpass filter. The most common filter mode is the lowpass filter, which attenuates frequencies above a variable cutoff frequency (see fig. 3.2.7).

Cutoff

The Cutoff knob sets the cutoff frequency. The labels around the knob indicate the approximate frequency in Hz (without the filter envelope and no key tracking applied). When the knob is turned to the left, the sound will become progressively darker. Turned fully to the right, the sound coming from the mixer will keep its full brightness. A special property of The Legend's filter is that it has a very wide range which exceeds the audible audio range.

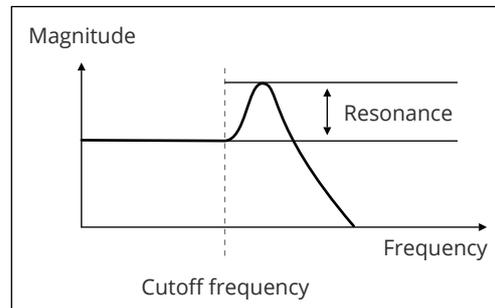


Fig. 3.2.7. Lowpass filter response

Resonance

This knob controls the filter resonance. Resonance in a filter creates a sharp peak around the cutoff frequency, emphasizing those frequencies. When the resonance value is higher than approximately 7.5, self-oscillation occurs. When the filter self-oscillates, it generates a sound very similar to a sine wave, and requires no external input like an oscillator to make a sound.

12/24 dB switch

The filter can be toggled between an attenuation of 12dB and 24dB per octave. This affects how quickly the high frequencies are attenuated above the cutoff frequency, either by 12 dB per octave or 24 dB per octave. The classic vintage analog lowpass filter uses a slope of 24 dB, however 12 dB can be very useful for brighter sounds.

LP/BP switch

The Legend offers two filter modes, a classic lowpass filter and a bandpass filter mode. A bandpass filter attenuates frequencies above and below the cutoff frequency, a useful mode to design sounds such as lead sounds with less bottom end.

Keytrack

Enabling the keytrack switches increases the cutoff frequency according to the key currently played. Higher keys correspond to a higher cutoff frequency. The first switch enables 1/3rd and the second switch 2/3rd of the keytracking. When both switches are enabled, full keytracking is achieved (it means that moving an octave up approximately doubles the cutoff frequency).

3.2.8. Filter Envelope



An envelope controls a sound parameter over time, starting from the instant a key is pressed (see fig. 3.2.8). The filter envelope is designed specifically to modify the filter cutoff frequency over time. Most sounds, whether synthetic or acoustic, start out very bright then become dark quickly. The filter envelope achieves precisely this effect in combination with the lowpass filter.

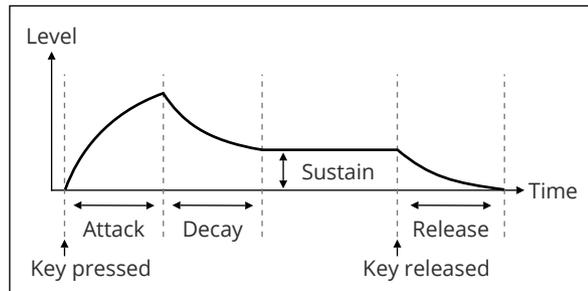


Fig. 3.2.8. The filter envelope

Envamt

Controls the amount of the filter envelope, which is added to the cutoff frequency.

Attack

The Attack knob sets the duration it takes for the envelope to reach its maximum value. Most sounds use a setting near the minimum in order to create a snappy attack.

Decay

After reaching the peak, the decay stage commences. During the decay stage, the envelope falls back to a lower level, the sustain level. The Decay parameter specifies the duration of the decay stage, i.e. how long it takes to fall back to the sustain level.

Sustain

This parameter specifies the sustain level that is reached after the decay stage ends. The sustain stage lasts as long as a key is depressed.

Release

The release stage is triggered whenever a key is released. The release parameter specifies the duration it takes the envelope to hit zero. Note that when the sustain level is set to zero, the release parameter may have no effect if the envelope has previously reached zero already.

Remarks

When triggering new notes, envelopes always continue from their current state. This behavior results in a smooth glide from one note to the next in Mono-Legato mode. In Poly mode, the smooth envelopes allow to play chords successively without clicks or other artifacts, despite the limited polyphony.

A unique feature of the filter envelope in The Legend is that when Decay and Release times are long, the envelope amount starts to build up. Hitting keys in quick succession thus yields a brighter and brighter timbre, which makes the synth sound dynamic and responsive.

3.2.9. Amplitude Envelope



The amplitude envelope works just like the filter envelope, but controls the volume of the sound, rather than its timbre (see fig. 3.2.9).

Attack

The Attack knob sets the duration it takes for the envelope to reach its maximum value. Most sounds use a setting near the minimum in order to create a snappy attack.

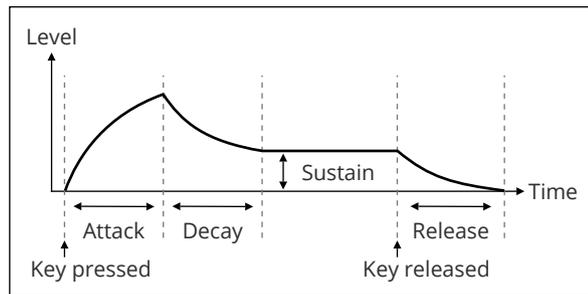


Fig. 3.2.9. The amplitude envelope

Decay

After reaching the peak, the decay stage commences. During the decay stage, the envelope falls back to a lower level, the sustain level. The Decay parameter specifies the duration of the decay stage, i.e. how long it takes to fall back to the sustain level.

Sustain

This parameter specifies the sustain level that is reached after the decay stage ends. The sustain stage lasts as long as a key is depressed.

Release

The release stage is triggered whenever a key is released. The release parameter specifies the duration it takes the envelope to hit zero. Note that when the sustain level is set to zero, the release parameter may have no effect if the envelope has previously reached zero already.

3.3. Back Panel

3.3.1. Global



PB Range

The two Pitch Bend Range controls adjust the maximum amount of semitones the pitch wheel will transpose up or down. Note that the controls operate just like all other knobs in The Legend, i.e. they must be left-click/dragged to change their value.

Note Priority

The meaning of the Note Priority switch depends on whether Unison/Mono mode is selected or the polyphonic Poly mode. In Mono and Unison modes, Last Note Priority means that a new key that is depressed will always take precedence over other keys depressed before. Low Note Priority will instead always play the lowest note. In Poly mode, up to four different notes can sound at the same time.

Last Note Priority will simply activate the most common voice stealing mechanism here, which is to take away voices only when necessary. For example if four keys are depressed, adding a fifth key will remove one of the previous notes playing.

The other mode Low/RR (RR=Round Robin) will instead cycle through the voices one by one, regardless of which keys are being depressed and what notes are currently playing. This mode is useful when Pan Spread is used, because this way it becomes possible to alternate voices between the left and right channels consistently.

The Note Priority switch has an effect on the Glide behavior, too. When in Mono or Unison mode, Lowest mode priority will give precedence to the lowest note, hence gliding from a lower note to a higher note is not possible. Choosing Last Note priority instead allows to glide both up and down, and thus is probably a better choice. This is also true for Poly mode. When choosing Last Note priority in Poly Mode, The Legend will try to glide towards the nearest note if possible, for instance when playing two different chords successively, typically giving the best results. In Round Robin mode, however, the poly glide behavior is less predictable, since the upcoming voice is going to glide starting from whatever note it played previously.

Mono Mode

This mode determines how overlapping notes are treated in Mono and Unison modes. Set to Retrigger, playing a new note will always restart the envelopes from the Attack stage. When set to Legato, a new note will only trigger the envelopes if no note is currently being held. Otherwise, The Legend will smoothly glide towards the new note, at a rate determined by the GLIDE knob.

Model Revision

The Legend offers two revisions to choose from. The difference between the two revisions is mostly in how the oscillator board is modeled, and can be easily noticed on patches using the Square, Wide or Narrow Pulse wave forms. Furthermore, the two revisions model part tolerances for the filter and amplifier.

3.3.2. Modulation



This section allows to fine-tune the amount of modulation.

Pitch Range

The Pitch Range control allows to increase or decrease the effect the modulation wheel has on the pitch. In order to have any effect, this parameter requires the OSC modulation to be enabled on the front panel.

Cutoff Range

The Cutoff Range control allows to increase or decrease the effect the modulation wheel has on the filter's cutoff frequency. In order to have any effect, this parameter requires the FILTER modulation to be enabled on the front panel.

Shape

This knob allows to blend smoothly between a linear and an exponential response of the modulation wheel. The effect is easiest to understand by opening a patch with modulation applied and then moving the modulation wheel all the way up slowly.

3.3.3. Oscillators



This section allows to adjust the oscillator circuit and keyboard models employed in The Legend.

Key Tracking

The Legend is capable of emulating anything from an instrument that is substantially out of tune (common for vintage synthesizers) to one with impeccable tuning, depending on personal preference.

The two parameters Key Tracking and Drift allow to control tuning imperfections in The Legend. Key Tracking determines how the tuning changes over the range of the whole keyboard. Set to mid position (0), key tracking is accurate and all three oscillators will be tuned perfectly across the entire keyboard. Choosing positive or negative values will cause notes to be slightly out of tune relative to each other. The more distance between the notes, the stronger the detune effect.

Note that changing the Key Tracking knob typically requires to adjust the Fine Tune knob on the front panel. When choosing large Key Tracking values like -5 or +5, the tuning across the whole keyboard is off by quite a bit, and thus a patch should be fine-tuned to the desired range, for example the bass range - otherwise The Legend may be out of tune when mixing it with other instruments.

Drift

The Drift parameter controls random pitch changes over time, for each oscillator separately. Set to zero, none of the oscillators will drift. The best way to find a suitable drift value is to enable two oscillators set to the same volume, then sustain a note and listen to how the oscillators beat over time.

3.3.4. Filter



Cutoff Range

This knob adjusts the Cutoff range of the filter. Positive values will increase the maximum possible cutoff frequency, negative values will decrease it.

Resonance Range

This knob adjusts the Resonance range of the filter. Positive values will increase the maximum possible resonance, negative values will decrease it. Increasing the resonance range will cause the filter to self-oscillate earlier as the Resonance knob on the front panel is turned up.

Symmetry

Analog filter circuits exhibit asymmetric effects when driven into saturation, causing even-order harmonics to appear at the filter output. The Legend faithfully emulates this behavior and allows to adjust it with the Symmetry knob. When set to zero, there is no asymmetric effects and the filter will only generate odd-order harmonics. In general it is recommended to use a non-zero value for authentic analog sound.

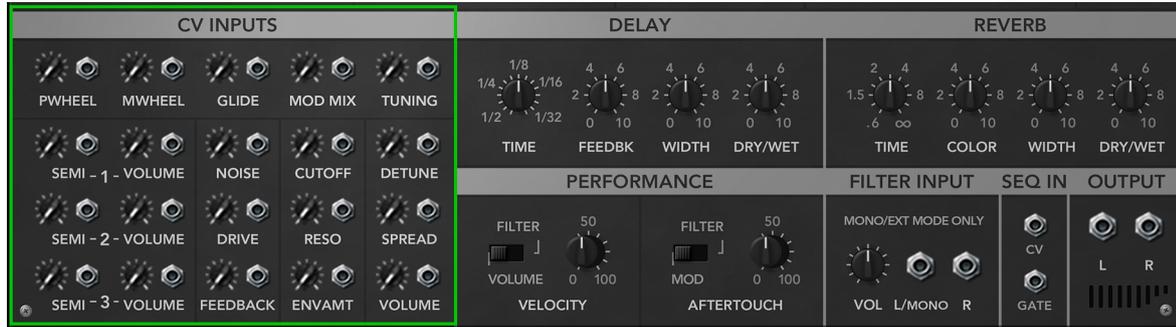
3.3.5. Amplifier



Saturation

After a sound has passed through the filter, it runs through the amplifier stage, where the amplitude envelope is applied to the sound. This stage is called voltage-controlled amplifier (VCA) in analog synthesizer and saturates the signal. The amount of saturation can be changed by using the Saturation knob. Note that the effect can be subtle and depends on how much gain has been applied previously via the Oscillator volume controls and the Filter Drive knob.

3.3.6. CV Inputs



Global

The Global CV inputs allow to modulate the Pitch and Modulation Wheel amounts, the Glide time, the Modulation Mix parameter and the overall tuning of The Legend with a one octave range.

Oscillators

With the Oscillator CV inputs, the tuning and volume of each of the three oscillators can be modulated. The tuning range is +/- 7 semi notes.

Mixer

The Mixer CV inputs allow to modulate the Noise Level, Global Feedback, and the Drive parameter which determines the gain into the filter.

Filter

Using the Filter CV inputs, it is possible to modulate the filter's cutoff frequency, its resonance and the filter envelope amount.

Output

This section hosts CV jacks to control the Detune and Spread parameters for the Unison mode, as well as a jack to control the overall Volume of The Legend.

3.3.7. Performance



The Legend can respond to Velocity and Aftertouch by adjusting the controls in this section.

Velocity

Velocity can control either Volume or the filter's cutoff frequency by setting the switch accordingly. The amount of velocity can be adjusted with the knob from 0 to 100. Set to zero, Velocity has no impact on the volume or filter. This setting is the default and corresponds to the typical behavior of vintage synthesizers.

Aftertouch

Aftertouch can control either the amount of modulation or the filter's cutoff frequency. The amount of Aftertouch can be adjusted with the knob from 0 to 100. Set to zero, Aftertouch has no impact on the modulation amount or filter. A value of zero is the default and corresponds to the typical behavior of vintage synthesizers.

3.3.8. Power Supply



The Legend models the effects of the power supply on the sound. The mains frequency can be switched between 50 Hz and 60 Hz.

3.3.9. Delay



Time

Sets the delay time in musical intervals (1 = half note, 1/8= eighth note etc). All delay times have two further variations marked "T" and "*". "T" denotes a triplet, whereas "*" extends the delay time by +50%.

Feedback

The feedback parameter adjusts how often the echoes are repeated. The percentage specifies the level change from one echo to the next, so 100% creates an infinite series of echoes, 50% cuts the level of each subsequent echo in half, etc.

Width

The Width parameter blends echoes seamlessly from monophonic to full stereo. The stereo echoes are of the ping-pong type, i.e. the echoes will alternate between the left and right channels.

Dry/Wet

Adjusts the amount of the delay effect, by blending between the dry and processed signals.

3.3.10. Reverb



A reverb effect is used to create the illusion of a sound being played back in a spatial environment such as a living room, hall or cathedral. The reverb effect in Legend is designed to give best results for synthetic sources, which are often more difficult to process than natural sounds.

Time

Allows to adjust the reverb time in seconds.

Color

The reverb in Legend is a two-band design, so bass and treble frequencies can reverberate with different times. The Color parameter adjusts the bass reverb time, relative to the main reverb time. Set to center position, the bass reverb time is equal to the treble reverb time.

Width

Adjusts the stereo width from mono (0%) to full stereo (100%).

Dry/Wet

Adjusts the amount of reverb, by blending between the dry and processed signals.

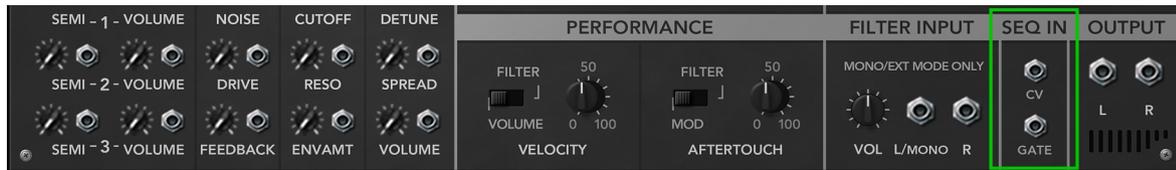
3.3.11. Filter Input



External sources (both mono and stereo) can be routed into The Legend using the Filter Input jacks, in order to take advantage of its high-quality low-pass filter. The level of the signal can be controlled with the Volume knob next to the input jacks.

In order for external audio to be processed, the Polyphony switch on the front panel must be set to "Mono/Ext". Like in the hardware world, the audio signal is mixed on the oscillator stage, before the filter and amplifier. Thus the filter, the amplifier and the envelopes can be used to shape the incoming audio signal. This implies that a key must be depressed to hear something.

3.3.12. Sequencer Input



The sequencer inputs can be used to connect Reason's step sequencers (such as Matrix, RPG-8, or Thor's) to program monophonic note sequences using Gate/CV signals. For best results, the Polyphony mode switch on the front panel should be set to either "Mono/Ext" or "Unison". The Note Priority switch on the back panel should be set to "Last".

3.3.13. Output



This section hosts the stereo output of The Legend. For monophonic applications, use the left (L) connector.

Appendix A. Sound Design Reference

Ab.	Author name	Email or website
AT	Aerotronic	http://www.soundcloud.com/aerotronic
DG	David Goodwin	-
EX	Daniel Thiel (eXode)	https://soundcloud.com/exodesound
IW	Ingo Weidner	ingo_weidner@web.de
KS	Kevin Schroeder	https://www.facebook.com/DejaVuSound
MH	Mark Holt	https://soundcloud.com/markholt
RH	Richard Hoffmann	http://www.synapse-audio.com
ST	Solidtrax	http://www.solidtrax.nl
TK	Marc Hoppe (Teksonik)	teksonik@outlook.com
XS	Xenos Soundworks	http://xenossoundworks.com/

The K.P.Rausch Patch folder is based on the "Classics Patch Charts Series" by Klaus P. Rausch, available on <http://www.backintimerecords.de/bitr045.htm>, and used with permission from the author. Many thanks go to Ingo Weidner for porting over the patch sheets to The Legend.

Appendix B. MIDI Implementation Chart

Parameter	CC#
ModWheel	1
Output Volume	17
Unison Spread	18
Unison Detune	19
Effects Active	12
Glide	5
Modulation Mix	16
Modulation OSC	14
Modulation FLT	15
Tuning Coarse	20
Tuning Fine	21
Osc 1 Active	22
Osc 1 Wave	23
Osc 1 Range	24
Osc 1 Semi	40
Osc 1 Fine	41

Parameter	CC#
Osc 2 Active	25
Osc 2 Wave	26
Osc 2 Range	27
Osc 2 Semi	42
Osc 2 Fine	43
Osc 3 Active	28
Osc 3 KTRK	31
Osc 3 Wave	29
Osc 3 Range	30
Osc 3 Semi	44
Osc 3 Fine	45
Mixer Osc 1	46
Mixer Osc 2	47
Mixer Osc 3	48
Mixer Noise	49
Mixer Noise Type	50

MIDI Implementation Chart cdn.

Parameter	CC#
Mixer Drive	51
Mixer Feedback	52
Filter Type	70
Filter LP/BP	84
Filter Cutoff	74
Filter Resonance	71
Filter Env Amount	77
Filter Env Attack	80
Filter Env Decay	81
Filter Env Sustain	82
Filter Env Release	83
Filter KTRK 1	78
Filter KTRK 2	79
Amplifier Env Attack	73
Amplifier Env Decay	75
Amplifier Env Sustain	76
Amplifier Env Release	72

Parameter	CC#
Opts Mod Pitch Range	111
Opts Mod Shape	112
Opts Mod Cutoff Range	113
Opts Osc Keytracking	114
Opts Osc Drift	115
Opts Flt Cutoff Range	116
Opts Flt Reso Range	117
Opts Flt Symmetry	118
Opts Amt Saturation	119
Delay Time	86
Delay Feedback	88
Delay Width	90
Delay Dry/Wet	92
Reverb Time	85
Reverb Color	87
Reverb Width	89
Reverb Dry/Wet	91

Appendix C. Remote Map

Synapse Audio	The Legend			
Volume	0	10	Value	ValueOutput
Polyphony	0	2	Value	ValueOutput
Unison Spread	0	10	Value	ValueOutput
Unison Detune	0	10	Value	ValueOutput
Effects Active	0	1	Toggle	ValueOutput
Glide	0	10	Value	ValueOutput
Modulation Mix	100O	100N	Value	ValueOutput
Modulation Osc	0	1	Toggle	ValueOutput
Modulation Filter	0	1	Toggle	ValueOutput
Tuning Coarse	-2	2	Value	ValueOutput
Tuning Fine	-100	100	Value	ValueOutput
Oscillator 1 Active	0	1	Toggle	ValueOutput
Oscillator 1 Waveform	0	6	Value	ValueOutput
Oscillator 1 Range	0	5	Value	ValueOutput
Oscillator 1 Semi	-7	7	Value	ValueOutput
Oscillator 1 Fine	-50	50	Value	ValueOutput

Oscillator 2 Active	0	1		Toggle	ValueOutput
Oscillator 2 Waveform	0	6		Value	ValueOutput
Oscillator 2 Range	0	5		Value	ValueOutput
Oscillator 2 Semi	-7	7		Value	ValueOutput
Oscillator 2 Fine	-50	50		Value	ValueOutput
Oscillator 3 Active	0	1		Toggle	ValueOutput
Oscillator 3 Keytrack	0	1		Toggle	ValueOutput
Oscillator 3 Waveform	0	6		Value	ValueOutput
Oscillator 3 Range	0	5		Value	ValueOutput
Oscillator 3 Semi	-7	7		Value	ValueOutput
Oscillator 3 Fine	-50	50		Value	ValueOutput
Oscillator 1 Volume	0	10		Value	ValueOutput
Oscillator 2 Volume	0	10		Value	ValueOutput
Oscillator 3 Volume	0	10		Value	ValueOutput
Noise Amount	0	10		Value	ValueOutput
Noise Type	0	1		Toggle	ValueOutput
Drive Amount	0	10		Value	ValueOutput
Feedback Amount	0	10		Value	ValueOutput

Filter Type	0	1		Toggle	ValueOutput
Filter LP/BP	0	1		Toggle	ValueOutput
Filter Cutoff	25	28000		Value	ValueOutput
Filter Resonance	0	10		Value	ValueOutput
Filter Envelope Amount	0	10		Value	ValueOutput
Filter Envelope Attack	2	35000		Value	ValueOutput
Filter Envelope Decay	2	35000		Value	ValueOutput
Filter Envelope Sustain	0	10		Value	ValueOutput
Filter Envelope Release	2	35000		Value	ValueOutput
Filter Keytrack 1	0	1		Toggle	ValueOutput
Filter Keytrack 2	0	1		Toggle	ValueOutput
Amplifier Envelope Attack	2	35000		Value	ValueOutput
Amplifier Envelope Decay	2	35000		Value	ValueOutput
Amplifier Envelope Sustain	0	10		Value	ValueOutput
Amplifier Envelope Release	2	35000		Value	ValueOutput