



ALPHA

FREE ALPHA
SYNTHESIZER



Manual

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Welcome

Thank you for trying the LinPlug Alpha or LinPlug FreeAlpha Synthesizer.

The Alpha is a software synthesizer designed for creating music on your personal computer. The Alpha features a subtractive design with special attention being paid to recreating the warmth and feel typically found in early-1980s analog synthesizers. Its key features include an easy-to-use interface, a wide range of oscillator waveforms, fat, rich-sounding filters, as well as numerous processing and modulation options.

This manual describes all aspects of the Alpha Synthesizer and is designed so that your use of this software is as efficient and enjoyable as possible. At LinPlug we're very proud of the Alpha Synthesizer; it's the result of many years of research and synthesizer programming experience. We hope you get a lot of pleasure using the Alpha Synthesizer and that it becomes an integral part of your music-making.

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Overview

Two versions of the Alpha synthesizer are available: the Alpha and the FreeAlpha. The FreeAlpha, as its name suggests, is available free of charge, however it has some limitations in comparison with the Alpha. See Appendix E for the differences between the two versions. This manual describes the Alpha so some parts may not be applicable to the FreeAlpha.



The Alpha synthesizer is a monotimbral, 24 note-polyphonic AU and VST analogue-style synthesizer with some extraordinary features. The synthesizer is based upon a classic subtractive design and includes two oscillator modules, a filter module, envelope and LFO modules, a chorus effect module and a unique, easy-to-use and powerful Modulation Matrix.

The structure of the Alpha synthesizer can be divided into 6 sections: Oscillator, Filter, Chorus, Envelope, Modulation (LFOs and Matrix) and Master.

Audio signals are generated by an oscillator that gets pitch information from the synthesizer's MIDI input. The MIDI input is automatically connected to MIDI output of the host software. The Alpha receives MIDI on all channels simultaneously.

The Alpha contains two oscillators. Each oscillator's pitch, amplitude and symmetry can be modulated using the Modulation Matrix.

The output of both oscillators is routed to the Filter section. The filter modifies the harmonic spectrum of the oscillator's output and has its own dedicated envelope for controlling the filter cutoff parameter.

The output of the Filter section is then sent to the Chorus section.

The audio outputs of the Alpha are automatically connected to the input of your host software's mixer. Here you can set the pan position of the Alpha's output.

At various points throughout the signal path you can modulate the signal using either envelopes, LFOs or MIDI controllers. The Alpha contains 2 independent envelopes and one LFO that can be routed to any available modulation destination.

Hopefully, this chapter has given you a brief overview of how the Alpha synthesizer works. More detailed information can be found in the following chapters.

Controls

Users have the option of controlling all Alpha synthesizer dials in either a circular or a linear manner depending on the Dial Mode setting on the Alpha's rear panel (see the "Main" section of this manual for more information about the Alpha's rear panel).

Holding down the ALT key while clicking on a control changes the selected control's value a minimum step upwards (when clicking in the upper half of the control) or a minimum step downwards (when clicking in the lower half of the control).

Holding down the CTRL key while clicking on a control sets the control to its default value (e.g. for Volume controls it sets the control's value to -6 dB).

All Controls can be automated using external MIDI messages. To do this you need to use the Alpha's ECS (Easy Controller Setup) which is described in the "Main" section of this manual.

Oscillators

One area in which the latest version of the Alpha has been substantially improved is its oscillator module. The Alpha's oscillator module is now more versatile because it contains many more waveforms, and it uses a different signal generation algorithm so it sounds smoother and more powerful as well. It also uses less CPU resources than previous versions of the oscillator module.

The Alpha's two oscillator modules are located on the top left of the front panel. Each of the Alpha's two oscillator modules outputs a waveform that is a combination of two basic waveforms.



Each waveform type is set by clicking on the WAVE item in the Alpha's OSC 1/OSC 2 sections. This opens a menu that allows you to select from the available waveforms. See Appendix B for a complete list of all waveforms. The waveform's pitch range is set in a similar manner using the RNG item.

To the right of these controls is the BAL (Balance) dial. This dial allows you to interpolate between the two waveforms. When the dial is at its leftmost setting, the waveform consists purely of waveform A. Similarly, if the dial is moved all the way to the right the waveform consists purely of waveform B. When in an intermediate position, the waveform consists of a mixture of the two waveforms. It's probably easier to understand this by trying it for yourself rather than having it explained to you. As an example, set one wave to Sine and the other to a different wave such as Sawtooth. As you rotate the dial from one end of its range to the other you can hear the wave "morph" from one waveshape to the other.

The "F" switch on the left allows you to switch between freerun (when switched on) and retitggered start of the oscillator (when switched off).

The MIX dial is used to set the relative output volume of each oscillator module. When the dial is set to 1 (i.e. it is turned all the way counter-clockwise) the output signal consists entirely of oscillator 1. When the dial is set to 2 (i.e. it is turned all the way clockwise) the output signal consists entirely of oscillator 2. The mid position provides an equal mixture of oscillator 1 and oscillator 2.

The DET (Detune) dial determines the amount of detuning between the two oscillator modules. A small amount of detuning can be used to create the swirling sound typical of many analog synth patches.

Filter

The Alpha's filter module is located on the bottom left of the front panel and contains 4 types of filter. These are: LP 12 ("Low Pass 12 dB/Oct."), LP 24 ("Low Pass 24 dB/Oct."), HP ("High Pass 12 dB/Oct.") and BP ("Band Pass 12 dB/Oct.").

The filter module contains several parameters. These are: DRIVE (sometimes called Saturation), CUTOFF, RESO (Resonance), DEPTH (Envelope Depth) and MODE.



The DRIVE (or saturation) dial can be used to overdrive the Alpha's filter. This can be used to produce warmer, fatter sounds.

The CUTOFF dial is used to set the frequency (in Hz) at which the filter begins to take effect. In the case of the Low Pass Filter, higher settings produce brighter sounds while lower settings result in darker sounds. In the case of the High Pass filter, higher settings produce thinner sounds while lower settings result in fuller sounds. The Band Pass filter combines a Low Pass and a High Pass filter. In this

case, the Cutoff dial sets the midpoint of the filter's pass band.

The RESO (Resonance) dial is used to set the amount of emphasis around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

The DEPTH dial is used to set the degree to which the filter's envelope effects the signal. Setting DEPTH to 0% (i.e. turning the dial completely counter-clockwise) means that the envelope has no effect on the filter. Setting DEPTH to 100% (i.e. turning the dial completely clockwise) means that the filter is modulated by the envelope's full range.

The MODE button is used to set either a positive or negative filter envelope shape. This can be used for a range of effects including opening the Filter when a note is released (this is impossible with a non-inverted envelope).

Envelopes

The Alpha has 2 independent envelopes for controlling the Output Amplitude and the Filter. These are located to the right of the oscillator controls, above and below the Modulation Matrix, and are labeled AMP ENV and FIL ENV respectively. Both envelopes are ADSFR-type, and consist of controls for ATT (Attack Time), DEC (Decay Time), SUS (Sustain Level), FAD (Fade Time) and REL (Release Time).



The ATT (Attack Time) dial is used to set the length of time it takes for the amplitude envelope to reach the full envelope depth. For example, if the ATT dial

is set to 0% (i.e. the dial is turned completely counter-clockwise), the signal's amplitude will move from zero to full volume immediately. If the ATT dial is set to 100% (i.e. the dial is turned completely clockwise), the signal's amplitude will move from zero to full volume in 10 seconds.

The DEC (Decay Time) dial setting determines the length of time (in seconds) that the amplitude envelope takes to move from the Attack peak level to the Sustain level. For example, if the DEC dial is set to 0% (i.e. the dial is turned completely counter-clockwise), the signal's amplitude will move from the Attack peak level to the Sustain level immediately. If the DEC dial is set to 100% (i.e. the dial is turned completely clockwise), the signal's amplitude will move from the Attack peak level to the Sustain level in 10 seconds.

The SUS (Sustain Level) dial setting determines the amplitude level after the initial Attack/Decay phase while a note is being held.

The FAD (Fade Time) dial is used to set the rate at which the signal amplitude moves from the Sustain level to either silence (when the dial is turned completely counter-clockwise) or full output (when the dial is turned completely clockwise). A FAD setting of 0% means that the signal amplitude remains at the Sustain level until the note is released.

The REL (Release Time) dial is used to set the length of time (in seconds) that the amplitude envelope takes to move from current Fade level to silence after the note is released. If the REL dial is set to 0% (i.e. the dial is turned completely counter-clockwise), the signal's amplitude will move from the current Fade level to zero immediately. If the REL dial is set to 100% (i.e. the dial is turned completely clockwise), the signal's amplitude will move from the current Fade level to the zero in 10 seconds.

LFO

An LFO (Low Frequency Oscillator) is an oscillator that generates a low frequency signal that can be used to modulate other aspects of the audio signal. The Alpha contains an LFO offering the following user parameters: WAV (Waveform), FREQ (Frequency), ATT (Attack Time), SNC (Sync) and Mode (Mono/Poly). The Alpha's LFO is located on the top right of the front panel.



The WAV (Waveform) parameter is used to select one of the LFO waveforms. To select a waveform, click in the box to the right of the WAV label. A popup menu containing six LFO waveforms will be displayed. The six available LFO waveforms are: Sine, Triangle, Sawtooth, Square, Noise and SamHo (Sample and Hold).

The FREQ (Frequency) dial is used to set the the LFO's frequency. If the FREQ dial is set to 0% (i.e. the dial is turned completely counter-clockwise), the LFO oscillates at 0.04 Hz. If the FREQ dial is set to 100% (i.e. the dial is turned completely clockwise), the LFO oscillates at 32.0 Hz.

The ATT (Attack Time) dial is used to set the length of time it takes for the LFO to reach the full modulation depth. This can be used to slowly increase the amount of modulation applied to the audio signal. If the ATT dial is set to 0% (i.e. the dial is turned completely counter-clockwise), modulation commences immediately. If the ATT dial is set to 100% (i.e. the dial is turned completely clockwise), modulation depth moves from zero to the maximum modulation depth in 10 seconds.

The SNC (Sync) popup menu allows you to set the LFO so that it is "synced" to the tempo of the current song. In this case, the LFO will retrigger according to the current sync setting (see Appendix C for the range of possible sync settings) rather than with each new Note-On MIDI message. For example, a setting of 1/4 will make the LFO retrigger on each quarter note.

Finally, the LFO can be set to either Mono or Poly mode. In Mono mode, one LFO is shared by all voices. This allows you to produce special effects such as very slow filtersweeps, even with short notes (because the LFO is not retriggered with each new note). In Poly Mode, each voice has its own LFO which is triggered by a Note-On MIDI message.

Modulation Matrix

The Alpha's Modulation Matrix allows you to create four user-defined modulation routings. See Appendix D for a listing of all modulation sources and destinations. The Alpha's Modulation Matrix is located in the center of the front panel.



Modulation sources are shown in a column on the left of the display, while the destinations are shown on the right. The modulation amount is displayed in the middle. To change a routing click on the source or destination that you want to change. A menu will appear which lets you select the new source or destination. To remove a modulation source or destination select the "- - - -" entry in the menu.

To change the modulation depth click on the amount display and move the mouse (while keeping the mouse button pressed) upwards or downwards (increasing or decreasing the value) until the desired amount has been reached. A negative modulation depth inverts the waveform of the modulation source.

The modulation of Main Pitch has a special display for modulation depth. The example shows a modulation depth of "2:40" (see the last row of the Modulation Matrix). This means that the signal's overall pitch is modulated to a depth of 2 semitones and 40 cents (or 2.40 semitones).

MATRIX		
Velocity	0.040	Cutoff Filter
LFO 1	2:40	Main Pitch
---	0.000	---
---	0.000	---

The amount of pitch change caused by the pitch wheel can be set on the Alpha Synthesizer's rear panel (see below for more information about the Alpha Synthesizer's rear panel).

The "Vol" switch on the top left region of the matrix switches the default velocity to volume modulation on or off.

Glide

The Glide or "portamento" section allows you to set the Alpha's portamento parameters. "Glide" continuously changes the pitch from one note to the next, connecting the notes and letting you smoothly "glide" from one to the other. The Glide section is located on the right of the front panel beneath the LFO section.

The Glide section has four controls: MODE, BEND, TIME/RATE and VOICES.



The MODE button has 4 values: Off, On, Held and Bend. The On and Off functions turn "Glide" on and off. When "Glide" is on, the Time/Rate dial is used to set the length of time it takes for the pitch of one note to reach that of a following note. The "Held" setting works as follows. If notes overlap then Glide is applied, however if they don't then the notes are played without Glide. This makes it possible to apply Glide only to selected notes. "Bend" allows you to apply a predetermined pitch bend to each note. The bend range is set using the BEND control. A bend range of -48 to +48 semitones is available.

The TIME/RATE control has two settings: Time and Rate. These settings determine the manner in which the pitch of one note moves to that of the a following note. When set to "Time", it takes a constant amount of time to move from one note to the next. In this case it will take the same amount of time to reach the destination pitch regardless of whether the preceding note was a semitone away or an octave away. When set to "Rate", the pitch of one note moves to that of a following note at a constant rate. This means that the amount of time it takes to move from one note to the next depends upon how far apart the pitches of the two notes are. The further apart the notes, the longer it will take for the pitch of the first note to reach that of the following note.

The VOICES control is used to set the number of available voices ("polyphony"). The maximum polyphony is 24 voices.

Main

The Alpha's Main section is located on the bottom right of the front panel. It contains various controls for setting global parameters.



The VOL (Volume) dial is used to set the overall output volume. Volume can be set in a range from -24dB to +12dB.

The SPREAD dial allows you to play six oscillators simultaneously, instead of the usual two. If the SPREAD dial is set to 0% (i.e. the dial is turned completely counter-clockwise), Spread is disabled. If the SPREAD dial is set to anything other than 0%, the Alpha's six oscillators are continuously detuned with one another. Higher settings create more detuning, so producing a fatter, thicker sound. A small indicator light shows when Spread is enabled.

The PRECISION control is used to set the accuracy of the Alpha's signal generation. When the "Precision" control is set to less than 100% small inaccuracies are introduced into the waveform at various point in the Alpha's signal chain. This is useful if you're trying to replicate the warmth of an old analog synthesizer. Precision can be set in a range from 90% to 100%.

The GEN button is used to generate random patch settings. To generate a new patch click on the button and some or all of the current parameter settings will be changed to new settings. The Gen range is set on the Alpha's rear panel (see below). Not all parameters are changed with each new random patch. With lower settings (e.g. 5%) less parameters are affected. Normally, a setting in the range of 2 to 10% will produce the most interesting and useable results.

The ECS (Easy Controller Setup) button makes it simple to control the Alpha from an external MIDI controller (either hardware or software). All you have to do is switch on the ECS button, select a Alpha Synthesizer parameter with the mouse and then send some MIDI messages to the Alpha from you MIDI source. That's all there is to it! From now on you can change the parameter with that controller. In addition to this, more than one controller can be defined to change a particular parameter. In fact, you can define up to 128 parameter-controller-combinations. This does not depend on the type of controller you have nor the particular MIDI Control Change messages it sends. Don't forget to switch off the ECS button after you have finished using it!

The Preset control is used for all File-related operations. The Load button opens a dialog that lets you select a file for loading. The Previous and Next buttons allow you to traverse a list of files. The Save button allows you to save the current preset settings. The Alpha loads and saves all of its presets directly to hard disk so your computer's RAM does not limit the number of available presets.

Clicking on the bank or preset name allows you to directly access another bank or preset within the current bank.

Rear Panel

The "Rear Panel" of the Alpha is accessed by clicking on the LinPlug logo at the bottom of the Alpha's front panel. Several master controls have been located on the rear panel to make the front panel less crowded, and also so that they are not changed accidentally while the Alpha is in use. The controls located here are Dial Mode, MasterTune, Bend Range and Gen. Range.



Dial Mode is used to select the Alpha's dial operation mode. Two modes are available: "Cir" (Circular) and "Lin" (Linear). In "Cir" mode the Alpha's dials track cursor movement in a circular fashion around the dial. In "Lin" mode the Alpha's dials track vertical cursor movement.

Master Tune is used to set the overall tuning of the Alpha. Tuning can be set from 430.0 Hz to 450 Hz.

Bend Range is used to set the Alpha Synthesizer's response to pitch bend messages. Bend Range can be set from 1 to 24 semitones.

The Gen. Range control is used to set the range for random parameter generation. It has a range of 0% to 100%. Using lower values will effect the patch less than using higher values.

With the Scale-Control you can load TUN-scaling files.

Finally, the rear panel also contains your Alpha Synthesizer's serial number and version number.

To switch back to the front panel click the LinPlug logo on the rear panel.

Chorus

The Chorus effect can be used to "thicken" a single sound creating the impression that it contains multiple voices. The Chorus works by mixing delayed signals with the original signal. The Alpha's Chorus features controls for WET, TIME and RATE and is located in the lower middle section of the front panel.



The WET dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

The TIME dial is used for setting the chorus' delay time (in milliseconds). Longer times produce a "chorusing" effect while shorter times create a "flanging" effect.

The RATE dial sets the rate at which the signal is modulated.

To set the chorus' sound we suggest you start with all controls at a medium position and successively change them until you find a sound that you like.

Get The Full Version

Registering the Alpha is very easy. All you have to do is visit our online shop at www.linplug.com and purchase a license. As soon as your credit card transaction has been authorized you will be sent a personal serial number. In most cases this will only take a few minutes.

After you've installed and opened the full version of the Alpha, go to the instrument's rear panel. The S/N edit box should read "Enter here". Enter the serial number you have received into the S/N edit box. If the serial number has not been entered or it has been entered incorrectly, the full version of the Alpha will not play any notes.

After entering the serial number return to the Alpha's front panel. Now send the Alpha a few note-on messages. After the Alpha receives the first few note-on messages it automatically becomes registered.

If you have any questions regarding the Alpha's registration process, please visit our support-area at www.linplug.com.

Glossary

Amplifier: A signal processing device that changes the amplitude, and hence the volume, of a signal.

Envelope: A time-varying signal used to control the development of another signal after it has been triggered. Envelopes are most often used for controlling a signal's amplitude. The shape of the envelope is determined by the number of control parameters. Usually four parameters are available: Attack Time, Decay Time, Sustain Level and Release Time.

Filter: A signal processing device that suppresses or "filters" out specific parts of a signal's frequency spectrum. Numerous types of filter are used in audio synthesis. These include Low Pass, High Pass, Band Pass and Notch. The tone controls on a stereo amplifier are one example of an audio filter.

LFO: An LFO or "Low Frequency Oscillator" is a periodic signal source (usually below audio frequency range) used to modulate another signal parameter. An LFO can be used for a variety of effects including vibrato (by modulating the pitch) and tremolo (by modulating the volume).

Modulation Matrix: A signal "junction" where a source signal can be patched so that it controls a destination signal. The Alpha's Modulation Matrix is used for tasks such as modulating an oscillator's amplitude by an LFO.

Oscillator: A signal source that generates a periodic waveform at a given frequency.

Appendix A: MIDI Implementation Chart

Product: LinPlug Alpha Synthesizer Version 2.0x Date: 11.June 2002
 LinPlug FreeAlpha Synthesizer Version 2.0x Date: 11.June 2002

Function	Transmitted	Recognized	Remarks
Basic Channel			
Default	no	no	
Changed	no	no	
Mode			
Default	no	Omni	
Changed	no	no	
Note Number			
True Voice	no	yes	
Velocity			
Note On	no	yes	
Note Off	no	no	
Aftertouch			
Poly (Key)	no	yes	
Mono (Channel)	no	yes	
Pitch Bend	no	yes	
Control Change	no	yes	
Program Change	no	no	
System Exclusive	no	no	
System Common			
Song Position	no	no	
Song Select	no	no	
Tune Request	no	no	
System Realtime			
Clock	no	no	
Commands	no	no	
Aux Messages			
Local On/Off	no	no	
All Notes Off	no	yes	
Active Sensing	no	no	
System Reset	no	yes	

Appendix B: Oscillator Waveform Types and Ranges

Types:

Sine, Triangle, Sawtooth, Square1, Square2, Square3, Organ1, Organ2, Organ3, Spectra1, Spectra2, Spectra3, Spectra4, RichSaw1, RichSaw2, RichSaw3, RichSaw4, SawSpec1, SawSpec2, VintSaw1, VintSaw2, VintSaw3, SawBass1, SawBass2, SawBass3, SawBass4, SawBass5, SawBass6, SawBass7, SawBass8

Waveform Ranges:

32", 16", 8", 4", 2"

Appendix C: LFO Sync Settings

Off, 16/1*, 16/1, 16/1T, 8/1*, 8/1, 8/1T, 4/1*, 4/1, 4/1T, 2/1*, 2/1, 2/1T, 1/1*, 1/1, 1/1T, 1/2*, 1/2, 1/2T, 1/4*, 1/4, 1/4T, 1/8*, 1/8, 1/8T, 1/16*, 1/16, 1/16T, 1/32*, 1/32, 1/32T

Note: "T" stands for Triplet and "*" stands for a dotted note. In the case of a dotted note, the note duration is equal to 1.5 times its original undotted value.

Appendix D: Modulation Sources and Destinations

Modulation Sources:

--- (Off), Note played (lg), Note played (ln), Velocity, Aftertouch(poly), Aftertouch (mono), Pitch Wheel, Modulation Wheel, Breath Controller, Foot Controller, ExpressionContr, CC16 Controller, CC17 Controller, CC18 Controller, CC19 Controller, LFO

Modulation Destinations:

---(Off), Amplitude Osc 1, Amplitude Osc 2, Pitch Osc 1, Pitch Osc 2, Pulsewidth Osc 1, Pulsewidth Osc 2, Cutoff , Resonance, Main Amplitude, Main Pitch, Modulation Depth 1, Modulation Depth 2

Appendix E: Technical Specifications

	ALPHA	FREEALPHA
Availability	VST MAC and VST PC	VST MAC and VST PC
Polyphony	24 voices	12 voices
Preset Memory	Unlimited (direct disk based)	Unlimited (direct disk based)
Oscillators	2 (Pitch, Amplitude and Symmetry modulateable), high quality, freerun switchable	2 (Pitch, Amplitude and Symmetry modulateable)
Waveforms	30 x 30 Waveforms	30 x 30 Waveforms
Filter	LP12, LP24, BP12, HP12 with Saturation, high quality	LP12, LP24, BP12, HP12
Envelopes	ADSR for Amplitude and Cutoff (may be inverted)	ADSR for Amplitude and Cutoff (may be inverted)
LFO	6 Waveforms, Syncable to Tempo, Attack adjustable, Mono/Poly Mode	6 Waveforms, Syncable to Tempo, Attack adjustable
Portamento/Glide	Mono & polyphonic Normal, Held and Auto-Bend (+- 48 semitones) Mode with adjustable Time or Rate	Mono & polyphonic Normal, Held and Auto-Bend (+- 48 semitones) Mode with adjustable Time
Voice Limit	1 to 12 voices or All (24 voices)	1 to 8 voices or All (12 voices)
Polyphonic Unison	Yes, spread adjustable	No
Precision	Yes, 90 (analog warmth) to 100% (digital cold)	Yes, 90 (analog warmth) to 100% (digital cold)
MIDI Learn	Yes (ECS)	Yes (ECS)
Chorus	Yes, adjustable Depth and Speed	Yes, adjustable Depth and Speed
Master Tune	Yes, 430.0 to 450.0 Hz	No
Modulation Matrix	Yes, 4 slot, 15 sources, 12 destinations	Yes, 4 slot, 15 sources, 12 destinations
Pitch Bend Range	Adjustable 2 to 24 semitones	Fixed 2 semitones
Patch Creator	Yes, adjustable	No
File Functions	Load, Previous, Next, Save, Direct access to presets and banks	Load, Previous, Next, Save
Microtuning	TUN File support	No
True Mono-Mode	Yes	No