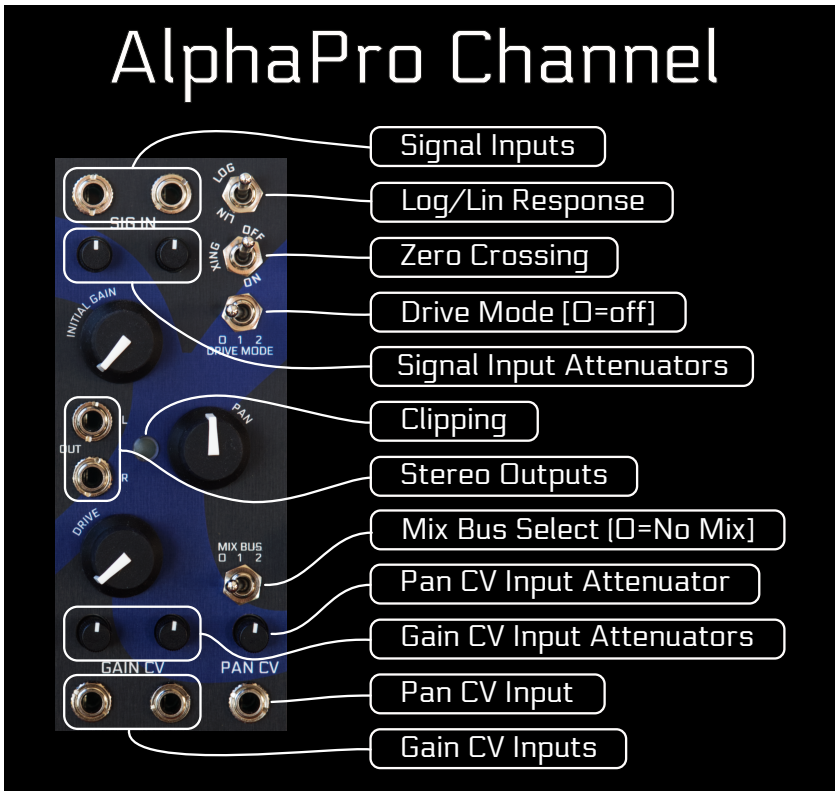
Alpha Pro User Manual

At its heart, Alpha Pro is just four identical VCAs, each with overdrive and stereo outputs. However, it's also possible to link any, or all, of the VCAs together to form a complex, voltage controlled mixer.

Let's start by taking a look at a single VCA channel.



1. Basic Operation

Each channel has two mono signal inputs. The two inputs are summed together before being sent to the VCA, with the attenuation of each input being set by the corresponding input trim pot.

The gain of the signal passing through the channel can be controlled manually by the Initial Gain knob, and by the Gain CV inputs.

There are two Gain CV inputs per VCA channel, each with its own attenuator control. The CVs are summed to form the CV controlling the VCA. As with most VCAs, a CV input of 0V or below corresponds to zero gain. If you want to use a bipolar signal to modulate the VCAs (for instance, from an LFO), then adding some Initial Gain will bias the VCA to allow the full range of the LFO to control the VCA.

The output of the VCA is stereo with a manual Pan control. Pan can also be modulated using the Pan CV input which also has an attenuator.

1.1 INITIAL GAIN CONTROL

The Initial Gain Control sets an initial gain for the VCA. With no CV applied, this acts just like a gain control on a mixer or amplifier. With the knob turned hard to the left, gain is zero. Turning the knob clockwise increases gain. The VCA behaves linearly or exponentially (labelled Log for historical reasons!) – both to Initial Gain and CV – depending on the Log/Lin toggle switch setting.

1.2 ZERO CROSSING

The Alpha Pro uses a zero crossing detector in the input signal. Engaging it using the Xing switch ensures that fast edges on the Gain CV inputs don't cause clicks on the output. These clicks are most commonly heard on low frequency signals.

Note that removing LK 3 on the PCB enables zero crossing control on pan, so that you can apply hard pans without clicks.

1.3 DRIVE

The Drive knob controls the level of the signal fed to the output stage. This can be used to overdrive the outputs to create distortion.

There are three distortion modes, set by the Drive Mode toggle switch

Switch Position	Mode
0	Off
1	Clip: A warm soft clipping distortion
2	FUBAR: A hard clipping style distortion

The Drive control does not operate with the Drive Mode off.

When the outputs are being overdriven, the Overdrive LED next to the Signal Output jacks will illuminate.

Note that, with Drive Mode set to Off, the full dynamic range of the VCA can be used, with clipping only present once you get up towards ±10v peak to peak.

However, the other two drive modes are optimised for the more common VCO levels of ±5v – in fact the drive will start to come in below this level. This is so that you can get the full effect of the Alpha drive sound without overdriving down-stream modules.

2. Mixer Functions

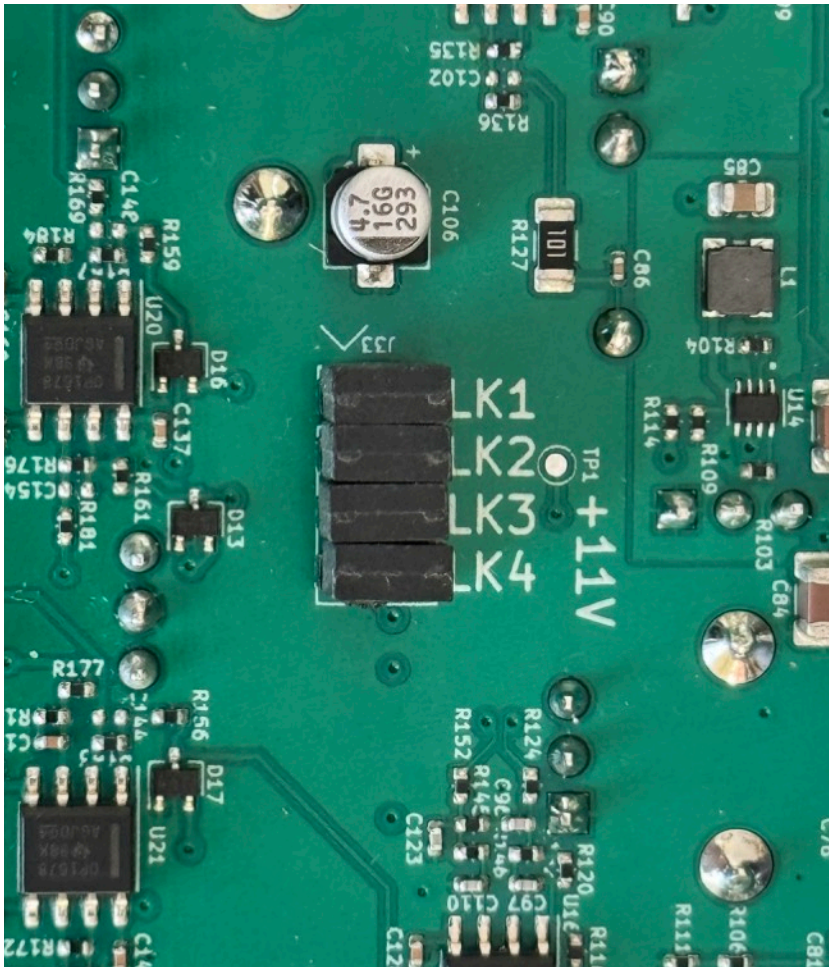
The Alpha VCA has two summing mix buses. By default, these are stereo buses and sum the outputs of the pan stage. It is possible to move the position of the mix buses using the links on the PCB (see Section 3.1).

Select which mix bus you would like to send the channel's output to using the Mix toggle switch. O means that the channel is acting as a stand-alone VCA, or you can select Bus 1 or Bus 2.

All the channels on a mix bus output the mixed signal of that bus.

3. Link Configuration

The Alpha Pro PCB has a block of four removable links that configure various options (LK1-4).



3.1 LK1 – INPUT AC/DC COUPLED

With LK1 fitted (as shipped from the factory) the Signal Inputs of Alpha Pro are DC coupled. This allows you to process CVs as if they were audio signals. However, some badly behaved oscillators have large DC offsets on their outputs, which can cause problems when summing or using the Drive capability.

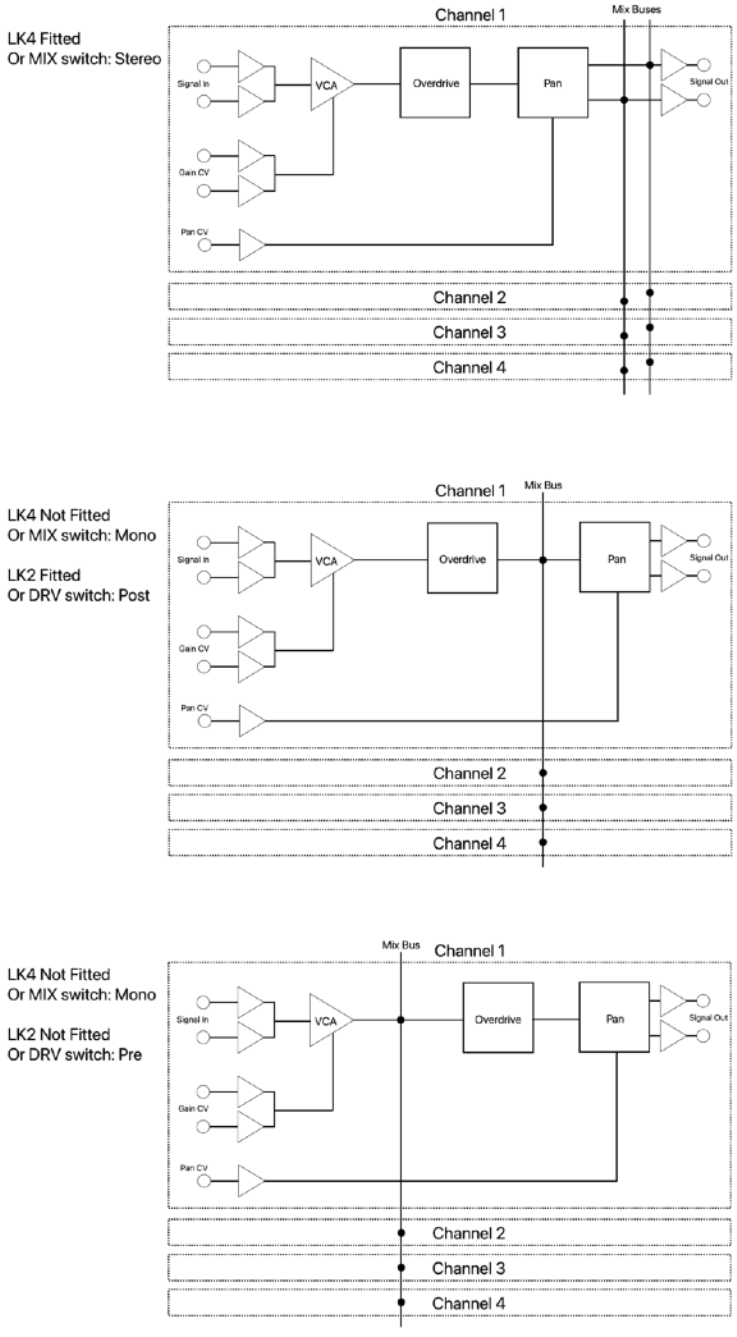
Removing LK1 will insert a high-pass filter before the VCA. The filter has a very low cut-off frequency (below 2Hz) so you can still use pretty slow LFOs as Signal inputs, and you'll have removed that troublesome DC bias.

3.2 LK4 – STEREO MIX BUS

Note that this is LK4 – it makes more sense to talk about them in this order! As discussed in Section 2, by default the mix buses on Alpha Pro are stereo and are after the pan control. All the channels on a mix bus output the mixed signal of that bus.

However, you may wish to control the Pan or Drive of channels individually. Figure 1 shows the options available for where the mix bus appears in the signal chain.

Figure 1: Mix Bus Options



Removing LK4 forces the mix buses to be mono and moves them to before the pan control. Where they appear in the signal chain depends on LK2.

3.3 LK2 – MIX BUS POSITION

With LK2 fitted (factory default) and LK4 removed, the mono mix buses are after the Drive circuitry. Removing LK2 moves the mix buses to before the Drive.

3.4 LK3 – PAN ZERO CROSSING

By default, the Pan CV input does not take into account zero crossing detection. Removing LK3 enables zero crossing on the Pan CV.

3.5 OPTION SWITCHES

If you want to be able to change these options without removing Alpha Pro from the rack every time, there's an optional 2HP switch board available.

Simply remove all the links from the control block (you might want to save them) and connect the 8 way ribbon cable that comes with the switches. Ensure that the red wire on the cable is at the LK1 end of the PCB connector (marked with a ˆ).

Then connect the other end of the cable to the switch board, again ensuring that the red wire is at the end of the connector marked with a ˆ, and install both into your rack.

Specifications

Width: 38HP

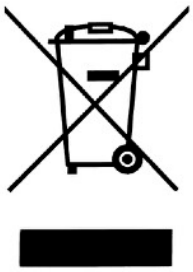
POWER CONSUMPTION

+12v: 250mA
-12v: 100mA
+5v: 0mA

Inputs:
Signal (Zero attenuation): ±5v nominal, ±12v max
Gain CV (Zero attenuation): 0-5v nominal
Pan CV (Zero attenuation): ±5v nominal

Outputs:
Stereo: ±5v nominal, ±10v max
With Drive Modes 1&2 outputs are normalised to around ±5v max.

Important Safety Instructions



Correct disposal of this product:

This symbol indicates that this product must not be disposed of with household waste according to WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection centre licensed for the recycling of waste electrical and electronic equipment (EEE).