

# Asteroid VCF Quick Start & Reference Guide

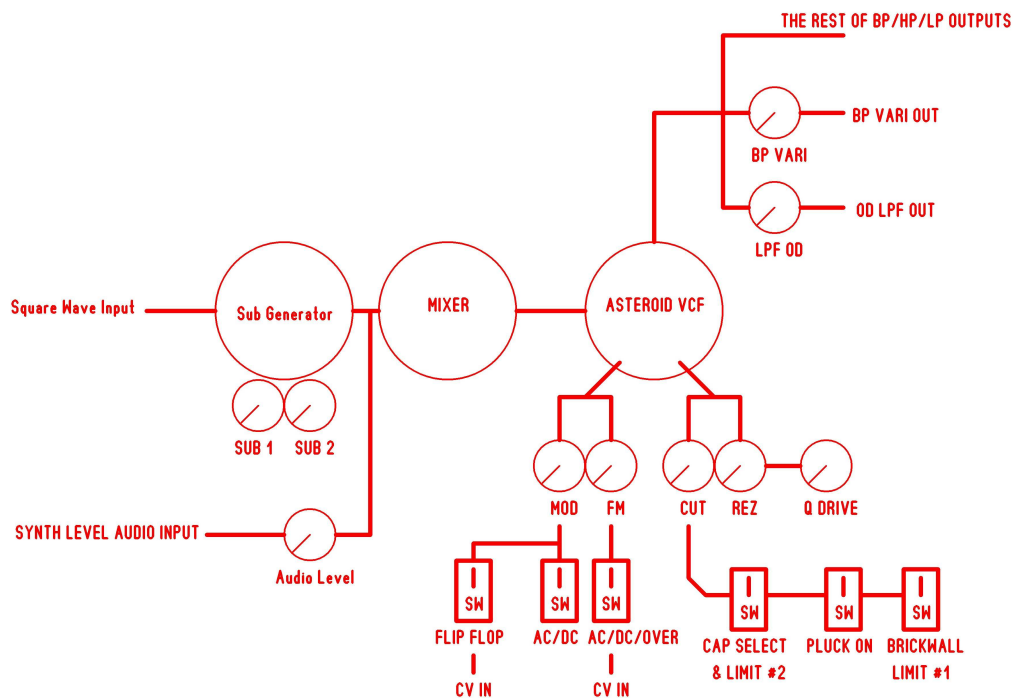
Thank you for your interest in Blue Lantern Modules. In this Reference Guide I will try to explain the various functions and workings of the Euro Asteroid VCF, the Ultimate VCF Operator Module.

In brief I will sum up what this module can do:

- Dude! 8 filter output combinations.
- Do normal (boring) State Variable BP, HP, LP filtering (in case you want to replace your boring vcf)
- Do Blue Lantern Specific (Secret Sauce) State Variable BP, HP, LP Filtering by use of the Switches.
- Has a (1) Dedicated Linear VCA
- Act as a Sine Wave Generator that can be pushed into Trapezoidal shapes to sound 'Tube' like.
- Has an onboard Sub Harmonic Generator with (2) Sub Frequencies you can mix to create (1) Fat Chord.

All the Filter outputs can be used simultaneous. With use of an external Mixer Module, like the Blue Lantern 6 Channel 'the mix' Module, you can combine outputs to come up with even more weird combos. I could only fit (8) variations on the front Panel.

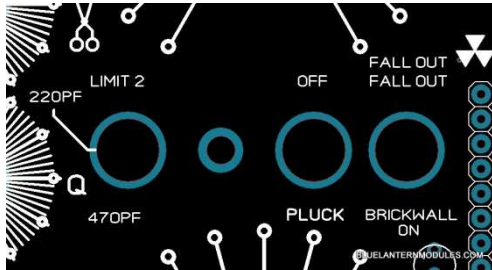
Here is the Block Chart to help you visualize how I internally setup this Module:



# Asteroid VCF Quick Start & Reference Guide

---

First I will try to explain some of the functions of the switches located between the Big Black Knobs. Those play an important role in determining the filter sound you want.



Starting from left to right: Capacitor Selector, Pluck, and Main Diode Limiter.

**\*Capacitor Selector Switch:** this lets you chose the flavor of the overall filtering. This switch will make the filter go from Acid Bubbly Sweeps, to clean State Variable sounds.

The default value in the middle 220pf position. 470pf doubles the capacitance and makes the filter sound more darker and smoother. Limit 2 turns on a 4 Stage diode ladder limiter + 220pf Capacitor, and tames any harsh or extreme sounds. Limit 2 is useful if you are sound shaping and you wish to get rid of the Rez whistle entirely. Limit 2 is good for that clean sterile sound. I advise you to toggle through these will you are sequencing a bass line for example to hear the different responses.

**\*Pluck Switch:** What the hell is this? Well this was a hack found by accident. Depending on which output you use, it will make the filter rumble in the lower Frequencies of the Cutoff knob. In some of the other outputs it can sometimes act like an abrupt comb filter. Be careful as it can sometimes increase the volume depending on the cutoff and rez settings.

**\*Brickwall switch:** This is the first stage Diode Limiter that protects all the outputs- soundwise. This is not a hard voltage protector. What I mean is this is like an Audio Compressor. 'Brickwall on' refers to the limiter smashing all thick peaks and uber high frequency sounds. When the Switch is set to 'FALL OUT, FALL OUT', well depending on the settings, will let your monstrosity patch be heard at it's true nature. It can literally at times sound like a nuclear bomb so be careful when the brickwall is not activated. If you require even more Limiting, look at the Limit 2 reference above (\*Capacitor Selector).

# Asteroid VCF Quick Start & Reference Guide

---

Now I will explain some of the knob controls and how they are connected internally.

**\*Audio input and Audio Level Knob:** The audio inputs are straight forward. You patch any Synth Level sound source into the jack labeled 'Audio'. There is an 'Audio In' Knob to mix in the amount of sound you want going to the filter. You don't always position the audio input knob fully clockwise, sometimes lower settings will give you some nice Rez sweeps.

**\*Sub harmonic Generator:** Dude, you are so welcomed! I don't know why no one has done this, it makes the filter sound so fat. The input for this is labeled 'SQ in', as for Square input. Use the Sub1 and Sub2 to mix in lower octave sub holy frequency. For best results use a square wave, I have also had success using a triangle wave as the input. Remember you can use a separate VCO to create tuned chords, it does not have to be the same vco. The levels are hot, so if you turn up the sub1 & sub2 fully clock wise it will probably drown out the 'audio in' signal in volume. Near the 12'o clock position of the sub knobs is good for normal mixing in making chords.

**\*FM Big Black Knob:** this is my standard issue Bi-polar circuit found in all my products. Middle position is zero, left or right is -/+. So this will let you manually inverse a cv signal. There is a toggle switch to the left of it that determines the signal input: DC, AC, or over. Over changes the internal resistor from 100k to 47k. The result is a wider cutoff swing. I made a pass through buffered jack that allows you to use the FM big knob for your other external Modules. This output is DC out only, the toggle switch does not affect the FM out. The Big Black knob just feels great.

**\*Mod Control Knob:** this is the same circuit as the bi-polar fm knob, but I did not include the 'over' option on it's toggle switch. So you only get AC or DC. Middle position is zero, left or right is -/+. So this will let you manually inverse a cv signal. Please look at 'Flip Flop' Switch below to see how I routed this control knob.

**\*FLIP FLOP Switch:** This switch is located far bottom left. When this switch is turned off the Mod input jack and Mod Control Knob are routed to the Cutoff CV only. When the Flip Flop switch is turned on, the Mod input jack and Mod Control Knob are routed to the cutoff cv and an inverted buffered copy is sent to the Rez CV. The effect creates a panning rotor control. When cutoff voltage is low, Rez voltage is high, and vice versa. The LED's on the panel will only light up when the FLIP FLOP is in use. The led's will behave according to the AC/DC switch also.

**\*Q drive Knob Control:** I internally routed and found a rez feedback hack. I added level control to determine how much you want. What this does is lets you bring back the audio level as you turn up the Rez. In early Moog Filters the sound lowered in volume when you turned up the rez.

**\*(2) PCV inputs:** These are direct input DC voltage controls for the cutoff knob. Normally this is for patching a keyboard or sequencer to control the sine wave self osc.

# Asteroid VCF Quick Start & Reference Guide

---

There are (2) specific controls that are only used for (2) outputs: LPF OD, and BP VARI.

**\*LPF OD Knob Control:** This will let you overdrive the audio mixed signal into the filter.

**\*BP VARI:** No, not Shari Vari. This BP lets you control it's notch sweep. You can make phaser like effects with this knob.

There is a Linear VCA on the panel. It is located on the right. It is pretty straight forward in operation. VCA input, Polar is where you plug in a Voltage source, and VCA out. Polar is just a Bi-polar circuit like the fm and mod controls: Middle position is zero, left or right is  $-/+$ . So this will let you manually inverse a cv signal. This VCA is not internally connected to anything, you are free to use it either before the filter or after the filter. The Linear VCA is high quality and using the v2164 ic chip.

Some notes on the Asteroid VCF. It uses (2) v2164 ic chips to make it's crazy 8 filtered outputs. It uses internal 5v reference regulation specific for the cutoff, rez, and vca knob controls. This will stabilize any voltage swings in your case because you either have a cheapo power supply or have way too many modules on the same rails. The front 40 pin solder points do not contain any hazardous voltages, 5v is the highest voltage. Please do not use any patch cables or metal to short out points on the 40 pin header, you might cause a short by using metal. Use your finger to make weird CV voltage changes only. Most of the points on the 40 pin header are cv input related.

Notes for the power connector: This is the first module to use the new Blue Lantern Modules Header converter power adapter. This allows me to use 18 gauge wire instead of the problematic ribbon cable used by the Doepfer format modular synth cases. This improves noise floor and will decrease module to module bleed thru. The adapter uses a Screw block terminal. I give about over 12" in length. If you needed to custom alter the length, you can cut and strip your own wires and screw them on. I advise to solder the tips of the wires, and use the same color scheme I choose. Red is +12v, Green is Ground, Black is -12v. 18 - 16 gauge wire is advised. I like 18 gauge.

When installing the module into your case please be sober and pay attention. The Female 16 Pin IDC header I use does not have a notch, so you are going to have to make sure it goes in straight. If you are using the standard Doepfer power scheme where -12v is on the bottom then make sure the Blue Lantern happy face is smiling normal. If the face is upside down it is wrong!!! The white stripe on the tiny pcb indicates -12v. With force it is also possible to insert the connector shifted up or down from it's intended location. It should slide in smoothly. Use the above solder joints to help you see where the pins are to relation to your power strip.

## Asteroid VCF Quick Start & Reference Guide

---

If your one of those DIY geeks that knows every single part invented and know where I could find notched Female Headers then drop me an email.