POLE-ZERO

POLE-ZERO is a 4-pole (24dB/octave) low pass Voltage Controlled Filter (VCF) utilizing MOSFET transistors. MOSFETs are known for their soft, vacuum tube like distortion when overdriven. POLE-ZERO is designed to exploit these characteristics with the addition of a MOSFET saturation control and provide a much wider palette of sounds when compared to a standard VCF. A Voltage Controlled Amplifier (VCA) is a relatively novel addition and also provides a simple way to amplitude modulate the filter without the need of an external VCA.

C — **CUTOFF FREQUENCY CONTROL**
Use this control to change the cutoff frequency of the filter. The spectral content of the input signal is reduced as this control travels from maximum to minimum in a counter-clockwise direction.

R — **RESONANCE CONTROL**
Use this control to resonate the input signal with respect to the cutoff frequency. When set to the maximum position, the filter will begin to self oscillate and can be used as a sine wave Voltage Controlled Oscillator (VCO).

FM — **FM POLARIZING ATTENUATOR**
This control affects the level of control voltage (CV) applied to the FM input. This control is capable of attenuating the CV level as well as inverting the polarity.
Center position (0) turns the CV level off.
Maximum position (+) results in the full, normal signal.
Minimum position (-) results in the full, inverted signal.

S — **SATURATION CONTROL**
Use this control to add warm, fat MOSFET saturation to the input signal, which increases the harmonic content and boosts the bottom end for maximum bass.

L1 — **FM LEVEL LED**
Indicates the cutoff level position as affected by the CUTOFF control and FM input.

L2 — **AMPLIFIER STATUS LED**
Indicates the amplitude level of the input signal as affected by the AMP CV input.

FM — **FM CV INPUT**
This input is for frequency modulating the CUTOFF of the filter with bipolar or unipolar control voltage. Signals applied to this input are processed through the FM LEVEL polarizing attenuator. The signal applied here will also sum together with a signal patched into the 1V/OCT scaled (SFM) input.

SFM — **1V/OCT SCALED FM CV INPUT**
This input is for frequency modulating the CUTOFF of the filter with bipolar or unipolar control voltage. This FM input is used for precisely tracking the filter when a keyboard or other controller is used and/or when the filter is used as a sine wave VCO. The signal applied here will also sum together with a signal patched into the FM CV input.

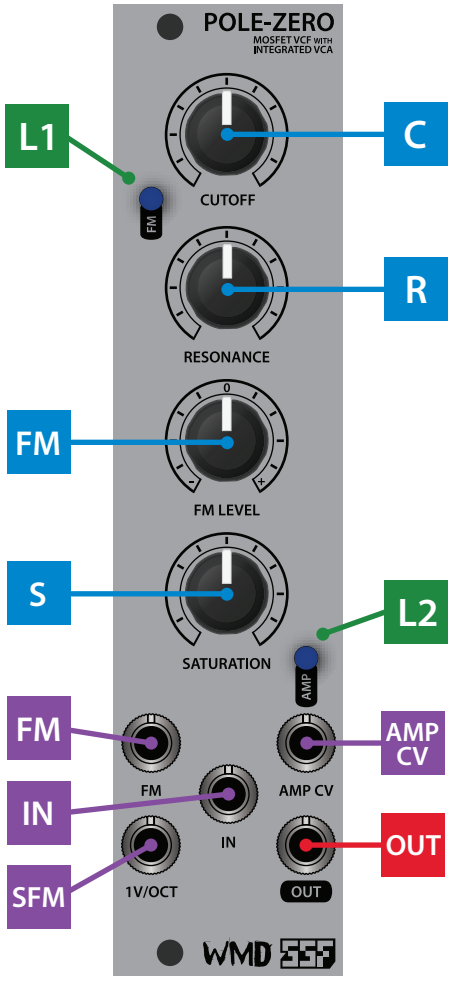
IN — **SIGNAL INPUT**
This is the input to the filter. The signal passes through the amplifier and saturater, then through the filter section and to the output (OUT).

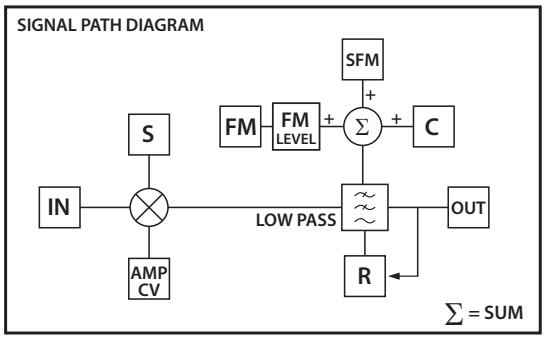
AMP CV — **AMPLIFIER CV INPUT**
Use this input to voltage control the amplitude of the signal. For normal operation, a signal is not required to be present at this input. Patching a positive polarity control voltage into AMP CV will cause the amplitude to follow the level of the control voltage (CV). Use 8 to 10 volt control voltages for nominal signal output level.

OUT — **LOW PASS OUTPUT**
Output of the saturater and filter.

COLOR KEY LEGEND

- PANEL CONTROL
- LED INDICATOR
- INPUT
- OUTPUT





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