



VERBOS ELECTRONICS

BARK FILTER PROCESSOR

Congratulations on obtaining your Verbo Electronics Bark Filter Processor. This Euro-Rack format module is a bank of 12 fixed filters on the Bark scale, a filter spacing proposed by Eberhard Zwicker in 1961. The filters are 6th order, allowing extreme separation between bands. All filters have direct outputs and envelope followers. A voltage controlled mixer pulled from the Harmonic Oscillator allows dynamic blending of the filters in various ways from voltage.

The Filter Bank

The 10 three stage, 36 dB/Octave bandpass filters are centered at 300Hz, 510Hz, 770Hz, 1.08kHz, 1.48kHz, 2kHz, 2.7kHz, 3.7kHz, 5.3kHz and 7.7kHz. There is a lowpass at 100 Hz and a highpass at 10.5kHz. There are separate inputs to the even filters and the odd filters with a gain control of each. If only one cable is plugged in, the signal is normalled to the other input. The jacks across the top are the individual outputs from the filters. The jacks in the second row from the top are the associated envelope follower outputs. These outputs have a yellow LED below them indicating the signal level at that filter's output. This comes in handy, acting as a spectrum analyzer for the signal going through the Bark Filter Processor. On the upper right, there is an output for each the even and odd filter mixes, a master output from all the filters and a master output of the highest level of all the followers at any given time. A knob controls the decay of all followers from 100 milliseconds to around 3 Seconds.

The Voltage Controlled Mixer

The sliders below the yellow LEDs are the manual gain controls for each filter in the voltage controlled mixer. Below the slider is an input to turn up that filter in the mix from an external CV. The red LEDs indicate the level of each channel in the mix.

The "width" and "center" controls allow the filters to be swept across like a bandpass filter. Reversing attenuators are available on both inputs. The "tilt" control as turned up will favor the higher frequencies and reduce the lower frequencies. Turning the control down will favor the low frequencies and reduce the higher ones. With this control centered, the filter mix is not effected.

The toggle switches on the right enable the odd envelope followers to control the even channels' levels in the mix or the even envelope followers to control the odd channels' levels in the mix. This can approximate a 6 band vocoder, but should generally be thought of as an effect for grafting the spectral shape of one signal onto another, as the modulator and carrier are not at matched bands. A 12 band vocoder could be created using 2 Bark Filter Processors with all the follower outputs from the modulator Bark Filter Processor to all the band CV ins on the carrier Bark Filter Processor.



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