



## Morphing Filter Bank

### Quick Specs:

**Size:** 8hp Wide, 2.375 inches deep

**Power Draw (max):** +12V: 29mA, -12V: 23mA

A unique take on voltage controlled formant filtering

Five outputs, each with a distinct timbre

Manual control over formant shifting, along with a CV input

Hand matched, high quality film capacitors used in the audio signal path

Limited release, handmade in NYC

### Installation:

To install the Morphing Filter Bank, allocate 8hp of space in your modular case. Because of the placement of the ribbon cable, it may be necessary to temporarily remove modules that are adjacent to the vacant space, while installing the Morphing Filter Bank. Turn the Morphing Filter Bank 90 degrees, so that the module is parallel to the mounting rails, and then insert it into your rack. When the module is in between the rails of your case, turn it back to its normal position, placing the panel on rails, screwing it in place.

The ribbon cable on the morphing filter bank comes pre installed, sandwiched between the two PCB's. The red stripe is already in its correct position on the module end. When installing the ribbon cable on the PSU of your modular case, ensure that its red stripe aligns with the **-12V** or **RED STRIPE** indicator. Failure to do so can result in permanent damage to the Morphing Filter Bank, your power supply, and/or other modules in your case.

### What does it do? :

The Morphing Filter Bank is a unique take on formant filtering. Four fixed frequency resonant bandpass filters are tied together in a feedback loop. Modulating the gain of this feedback loop, via the **voice** control, causes the resonant peak of each bandpass filter to split into two new peaks, which then diverge across the frequency spectrum.

The Morphing Filter Bank is a versatile tool that can add anything from prominent vocalizations to subtle timbral shifts to patches. A **variable notch** output is provided alongside the bandpass outputs. When the **voice** control is at zero, the frequency response of the **variable notch** output is near flat, meaning it allows all frequencies to pass unaltered. Modulating the **voice** control increases the width and depth of the notch, adding an almost phaser-like sound along with the formant filtering. A notch filter is the inverse of a bandpass filter, allowing both high and low frequencies to pass. Because of this the notch output is great for adding motion to bass patches.

### How to patch it? :

Patch a harmonically rich waveform to the input, like a squarewave or sawtooth. Listen the module's outputs one at a time as you manually turn the **voice** control clockwise and then counterclockwise. Note that the **voice** control is zeroed in the center position. Next apply a bipolar LFO to the **CV** input and turn its associated attenuator fully clockwise. The **CV** input internally sums with the **Voice** control panel setting. The expected range of this sum is +/- 5V. Adjust the **voice** control panel setting and **CV** attenuator to taste.

**A quick note:** For prominent formant shifting, it is essential that the bandpass filters are highly resonant. Depending on the amplitude, frequency, and harmonic complexity of the input waveform, it is possible to hear distortion when you are listening to the 12dB outputs, especially when the sum of the **voice** control and **CV** input is 0 volts. This distortion can be desirable depending on the context, but if you wish to avoid it, try attenuating the input signal or manually adjusting the **voice** control.

### Further patching:

The Morphing Filter Bank is great for parallel processing. Patch a synth voice along with a chosen sequence. Mult the voice's output and apply it to the input of the Morphing Filter Bank. Take two outputs from the Morphing Filter Bank, one from **bp1** and another from **bp2**. Apply these two outputs to the inputs of a stereo delay or reverb. Set the effect to mostly wet. Mix the effect with the multed dry signal from the output of your synth voice. Apply an LFO to the **CV** input of the Morphing Filter Bank. As your sequence plays, listen to the resonant formant shifts excite the delay/reverb, creating interesting textures in the background of your mix.

