



Farbfolder

Making Sound Machines

Farbfolder

Farbfolder is an analog wavefolder for Eurorack, designed to add harmonically related overtones to an audio signal.

It does this weird and wonderful trick of folding up the wave at the zero points, "squaring" a sine off with more and more sinusoid edges, thus adding odd harmonics.

This module is excellent at adding rich harmonics to a basic waveform. Its circuit can produce characteristic timbres similar to pulse-width and frequency modulation.

It is part of our Farbfilter (colour filter) range of sound colouring modules, offering a wide sonic palette from lending subtle colour to rich timbre bending tones in 4HP.

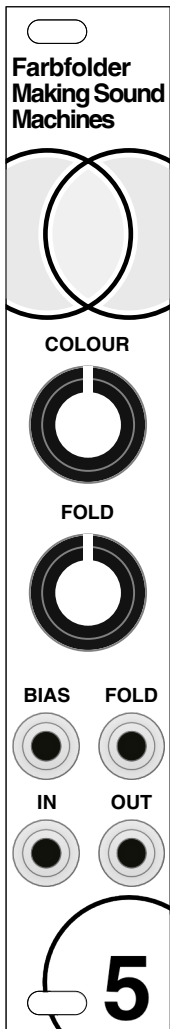
Installation

Farbfolder requires a -12V /+12V Eurorack power supply. Connect the 2x5 pin header on the back to the bus board of your Eurorack case using the included ribbon cable. The red stripe on the ribbon cable needs to match the Red Stripe mark on both Farbfolder and bus board.

Power consumption: +12V 70 mA / -12V 25 mA

Find an expanded online version of this manual under makingsoundmachines.com/farbfolder/manual/

Instructions for building the DIY version of this module makingsoundmachines.com/farbfolder/build/



Colour

Turn the Colour knob to sweep through the overtone spectrum of the incoming audio signal. Farbfolder specifically produces odd harmonics - the third, fifth, ninth, eleventh and thirteenth overtone.

Fold

Turn the Fold knob to add even more harmonic content, extending the range into an altogether brighter spectrum. The Colour and Fold parameters build onto each other. Imagine this as setting a baseline using Colour, then adding Fold on top.

Fold CV

Fold comes with a CV input (top right jack). If a signal is present here, the Fold knob becomes an input attenuator. Patch an envelope or LFO into this input to produce vividly animated timbre changes. The Fold input accepts a 0 - 10V range.

Bias CV

Using the Bias input (top left jack), you can offset the signal on the audio input by either a positive or negative voltage. Use -10V /+10V CV from an LFO or envelope. Patching an Audio signal into this input will result in very cool FM-like timbres.

Audio In + Out

Patch an audio signal into the Audio In (bottom left). The Audio input expects a -5V /+5V range. The Audio Out jack provides the processed output signal.

Folder vs Shaper

One frequently asked question is the difference between the Farbfolder and Farbshaper circuits. Both are classic West Coast wave folding circuits, but they work differently.

Farbfolder folds at the zero-crossing of the signal and adds sinusoid folds there, thus adding odd harmonic overtones. Bias then serves as a DC offset at the input.

Farbshaper creates a typical Batman waveshape - the first stage of the module folds a wave into two pointy peaks with a flat trough in the middle, resembling a silhouette with two pointy ears. The second stage of the module adds extra folds left and right, sideburns if you will.

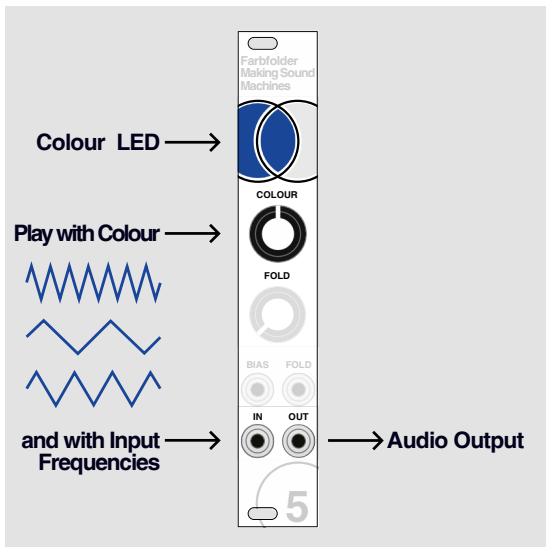
Both modules complement one another as a way to add harmonic content and sonic interest to an input signal.

Thank you

Stijn and Priscilla at TiNRS This is Not Rocket Science, Lauri at Vaski Embedded, Jon-Mark at Apollo View Modular, Manu at Befaco, Paul at Error Instruments, Steven Okyeron, Thomas at XOR Electronics. Jan – Kabuki, Ben – DivKid, Mark – Synthdad. Thank you for all your time and support.

Getting started

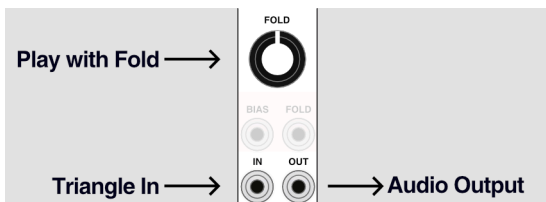
Turn the Colour and Fold potentiometers down (fully counterclockwise). Patch a triangle oscillator at around C2 (65.4 Hz) into the Audio In.



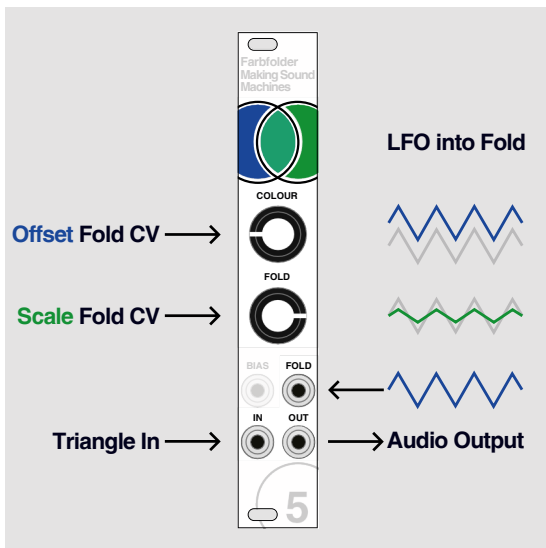
Sweep the Colour knob to progressively add overtones. You will get a very vocal, Didgeridoo-like timbre.

When you set the oscillator to lower octaves, the effect will sound less vocal. In higher octaves you will start to get a phasing timbre.

Turn the Colour knob all the way up. Sweep the Fold knob. You will add a range of much brighter overtones.



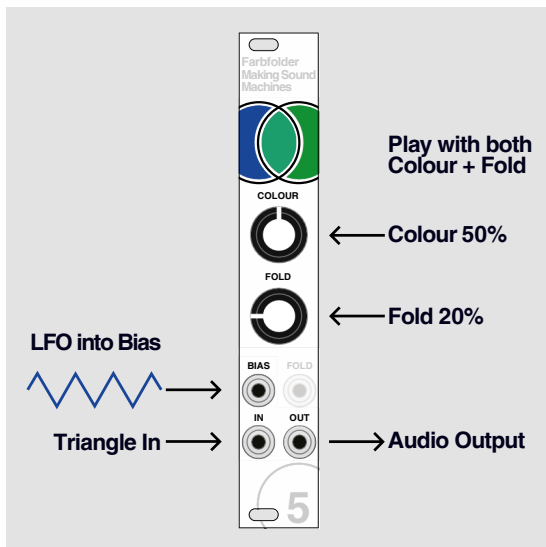
Patch an LFO into Fold CV. Offset the LFO range using the Colour knob. Scale the LFO range using the Fold knob - all the way counterclockwise, you will hear no modulation.



Fold CV is a great patch point for a synth voice's envelope, shaping the timbre alongside the amplitude.

Unpatch Fold CV. Set Colour to 12 o'clock and Fold to 9 o'clock.

Feed a slow LFO into Bias CV. Experiment with how different Colour and Fold settings affect the sound.

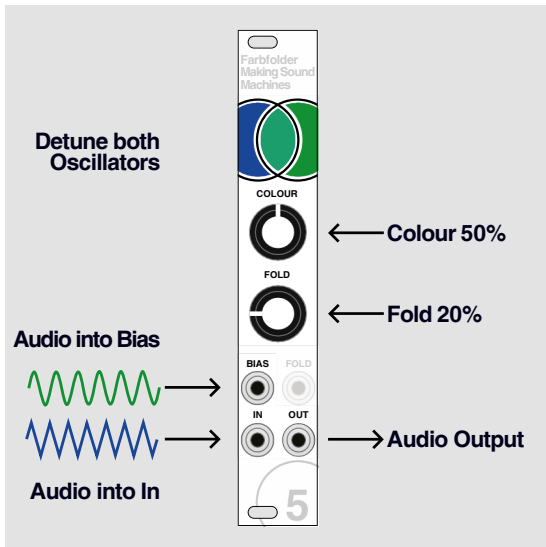


There are regions at each end of the modulation range where the audio fades away. This can be great to create rhythmic, gated sounds.

Try various modulation shapes and speeds, anything including audio rate modulation leads to great results and can be flexibly dialled in using the knobs.

Patch in a sine wave at audio rate instead, at about the same frequency as the oscillator on the Audio In jack.

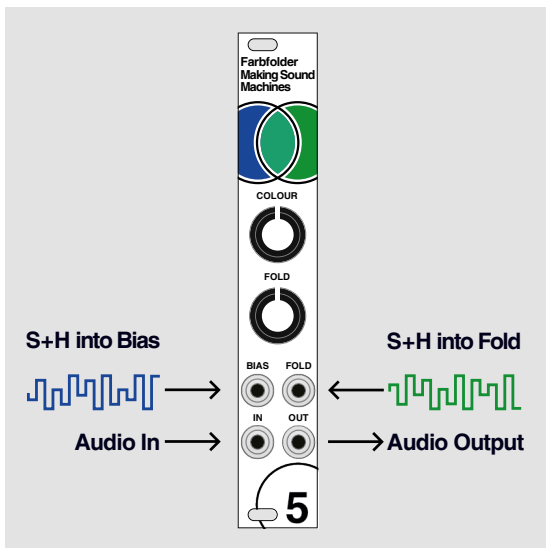
You will get a very cool timbre, with bubbly peaks and troughs where the frequencies beat against each other.



Experiment with detuning the oscillators against one another, and setting them to different octaves slightly detuned against one another.

Patch in a very slow LFO into fold and scale the modulation depth to your taste. Adjust the LFO frequency on Bias. You will get rich, undulating textures.

Finally patch a Sample and Hold into Fold CV and Bias CV at the same time. You will get lively, constantly evolving timbres. If you own two Farbfolder modules, or double track the same signal with a recording setup, this will make for a smashing stereo effect.



Explore

We hope this short tutorial section has inspired you to start experimenting with your own settings and sonic material. Acoustic sounds and drum loops are an equally fascinating jumping off point to process with this module.

Enjoy Farbfolding - and if you make something you like, do not hesitate to share the results!

The **Farbfilter** Series

Our Farbfilter (colour filter) series is a range of sound colouring modules for Eurorack. Designed to fit a 4HP footprint, they are compact, tweakable and easy to use.

These modules are our personal take on our favourite analog effects circuits from East and West Coast Modular Synthesis.

Farbfilter

Farbfilter is a classic analog transistor ladder lowpass filter for Eurorack. It is a staple of subtractive synthesis and famous for its rich warm sound. We enhanced its palette with a colourful drive and CV controlled resonance.

Farbshaper

Farbshaper is based on a shaper circuit that turns a ramp into a sine, and was historically used in function generators and oscillators. On any other signal it will add one or multiple wave folds.

Farb Highpass

Farb Highpass is an analog transistor ladder highpass filter. We tweaked the circuit and added CV control over resonance, as well as a Tilt EQ. It lets you either bring some of the warmth back in, or double down on the highpass effect and go all sizzly.