# Free Modular

Drift

Drift is a modulation source capable of creating organic, always moving, never repeating control voltages with just a couple simple parameters. Drift can operate in four different modes depending on a configuration DIP switch on the back of the module. It can generate voltages according to a stacked Perlin noise algorithm, cubic Bezier interpolation, Brownian motion, or it can act as a simple LFO.

Drift

Speed

Texture

Atten

Out
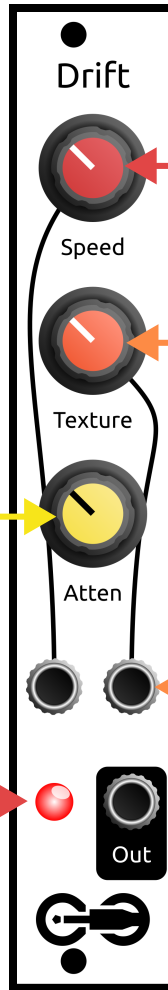
Speed

Controls how quickly the random voltages change. Tracks volt-per-octave. The knob spans 12 octaves but the CV is limited to 0-5v, so it can only scan within the neighborhood of the knob. The frequency at 0v is 1/40 Hz (so 40 seconds/"segment") but Hertz is not well defined for non-repeating algorithms, so it will probably feel slower.

Attenuation

Scales the output signal from 0-10v (full clockwise) to 0v (full counterclockwise).

Texture

Texture controls a secondary parameter of the noise which varies according to the algorithm being used. Both the knob and the CV go from 0-5v. They are summed and then clamped to 5v.

Output

Outputs unipolar smooth random signal. LED indicates output level.

Perlin Mode

Perlin mode is the default algorithm. It is based on the algorithm by Ken Perlin, designed to create very smooth but organic and unpredictable landscapes.
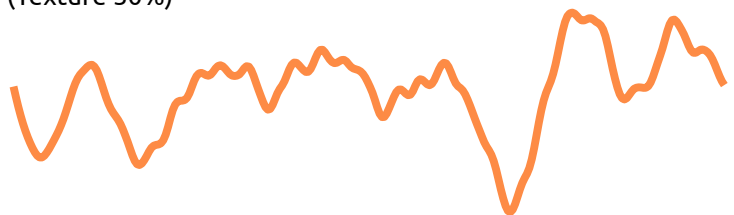
Speed controls how quickly the algorithm travels through the random landscape

Texture controls the roughness of the output. Fully counterclockwise, the output is totally smooth. As the texture increases, the output becomes rougher by blending in higher frequency noise.

Low texture Perlin noise
(Texture 0%)
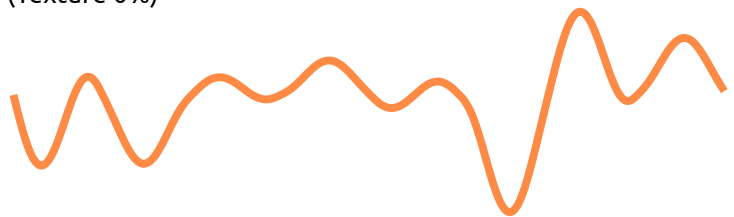
Medium texture Perlin noise
(Texture 50%)

Bezier Mode

Interpolates between random points using smooth Bezier curves

Speed controls the average time between random values

Texture controls how the random points are distributed in time. Near 12 o'clock, the points occur at a fixed interval. As the texture magnitude increases, the time between points is sampled from an increasingly wider Gaussian distribution.

Texture also controls the shape of the curves. When the texture **knob** (not CV) is right of center, the transitions between the random values are smooth. When the texture knob is left of center, the Bezier control points are switched to vertical instead of horizontal, creating spikes that accentuate instead of smooth over the transitions between values.
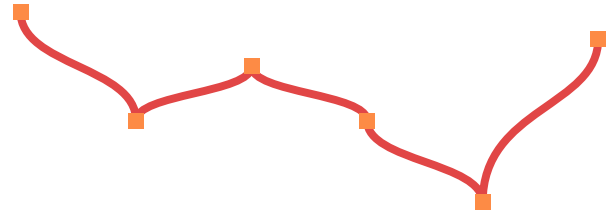
Smooth Bezier easing
(Texture right of center)
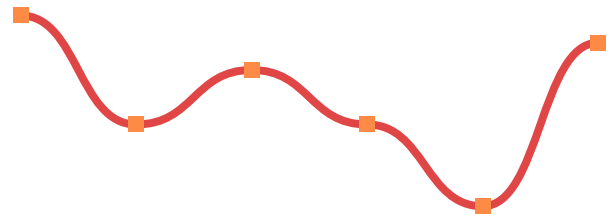
**Inverse Bezier easing**
(Texture left of center)

Brownian Mode

Brownian motion, or a "random walk," is a type of random motion where a particle moves in a random direction at every step, leading to jittery noise at high frequencies and organic-looking emergent patterns over time.

Speed controls how likely the particle is to move.

Texture smooths the motion by applying a proportional filter to it. More smoothing is applied as the texture value gets lower.

Brownian noise
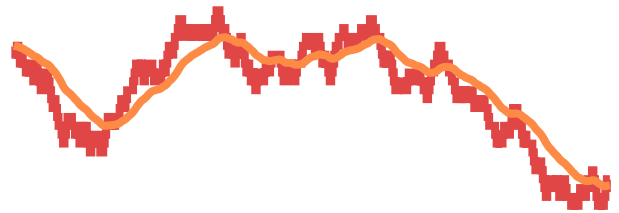
— Original (full texture)
— Smoothed (less texture)

LFO Mode

This mode is just a basic triangular LFO.

Speed controls the frequency of the LFO.

Texture morphs the LFO between reverse saw (left), triangle (center), and raw (right).

Skewed triangle LFO

— Texture 50%   — Texture 75%   — Texture 100%

Configuration

One of the four algorithms can be selected by setting the two DIP switches on the back of the module (or soldering the desired connections directly). You must cycle the power for changes to take effect.

Switch 1	Switch 2	Algorithm
OFF	OFF	Perlin
ON	OFF	Brownian
OFF	ON	Bezier
ON	ON	LFO