FreakShift

[Ring Modulator + Frequency Shifter **]**

By EKSSPERIMENTAL SOUNDS STUDIO

FreakShift [Ring Modulator + Frequency Shifter]

A combined ring modulator and frequency shifter for Reason. Two effects inspired by DIY electronics of the 70s. Runs in series and share one LFO and one envelope follower for modulation.

SIGNAL PATH

Input → Drive → Ring Modulator → Frequency Shifter → Mix → Output

INPUT / DRIVE

Saturation of the input signal to create a slight warmth or fuzzy overtones. Can be used as only for the wet signal of for both dre and wet with the routing switch.

DRIVE: Soft-clip saturation feeding both effects. Unity at centre, rising to about +24 dB at maximum, where it moves into hard clipping for fuzz.

PRE/WET: Where the drive sits relative to the master Mix. Drive PRE puts it in series, pre dry/wet separation, so it colours both the dry and wet sides. Drive WET keeps the dry side clean for parallel distortion.
LEVEL: Monitor the input level by the intensity of the light.

RING MODULATOR

Multiplies the input with an internal carrier oscillator, producing sum and difference sidebands. The result is inharmonic — metallic, bell-like or clangorous depending on the carrier frequency. With amount at 50% the square will perfectly cancel out on high cycles, creating stuttering. Use with sine and lower amount with low rate for a soft tremolo. Use with random wave to create clicky artifacts.

SHAPE: Carrier waveform: Sine, Triangle, Square, Ramp, Random (sample and hold) or Drift (slewed random). The non-sine shapes alias and create grit and glitchy sounds at high Tune settings.

AMOUNT: Level of the ring-modulated signal in the mix, 0–100%.

CARRIER: Carrier frequency, 0.1 Hz to 15 kHz (logarithmic). Low settings give tremolo; higher settings give metallic, bell-like tones.

FREQUENCY SHIFTER

Shifts every frequency in the signal up or down by the same number of hertz, rather than by a musical interval. This breaks the harmonic ratios, so even small shifts sound detuned, low values with MIX at 50% and some feedback will create a swirling phaser sound.

SHIFT: Shift amount in Hz. Positive shifts the spectrum up, negative shifts it down. Unlike a pitch shift it is not musical, harmonics move out of tune.

RANGE: Selects the range for the shift amount: Fine (±50 Hz) or Coarse (±2.5 kHz).

MIX: Level of the frequency-shifted signal in the mix, 0–100%. At 0% the shifter is off.

FB: Feeds the shifter output back to its input, 0–100%. With a small shift it produces continuously rising or falling (Shepard-tone) effects.

WIDTH: Spreads the shift across left and right. Centre is mono.

ANTI-REFLECT: On removes the mirror-image sideband for a cleaner single-sideband shift. Off lets it through for a rawer sound.

QUALITY (backside): DSP quality versus CPU load: High, Eco or Lo. Lo adds some pretty nice lo-fi character of its own.

ENVELOPE FOLLOWER

Tracks the input level and uses it as a modulation source, so the effect responds to playing dynamics. DST allow you to route the modulation to either tuning/shift or amount/mix.

SENS: Sensitivity, how strongly it reacts to incoming audio.

ATK / DCY: Rise and fall times of the envelope.

DEPTH / DST → RM: Modulation amount and target for the ring modulator.

DEPTH / DST → FS: Modulation amount and target for the shifter.

LFO

Shared modulation source for the ring modulator and shifter. Depth is bipolar, positive raises the target, negative lowers it. The LFO goes well into audio range for even more freaky weirdness.DST allow you to route the modulation to either tuning/shift or amount/mix.

SHAPE: Sine, Triangle, Square, Ramp, Random or Drift.

SYNC: Off (set in Hz) or ON (sync to host).

RATE: Speed in Free mode, 0.01 to 120 Hz

RATE (Sync on): Tempo division synced mode, 8/1 to 1/16

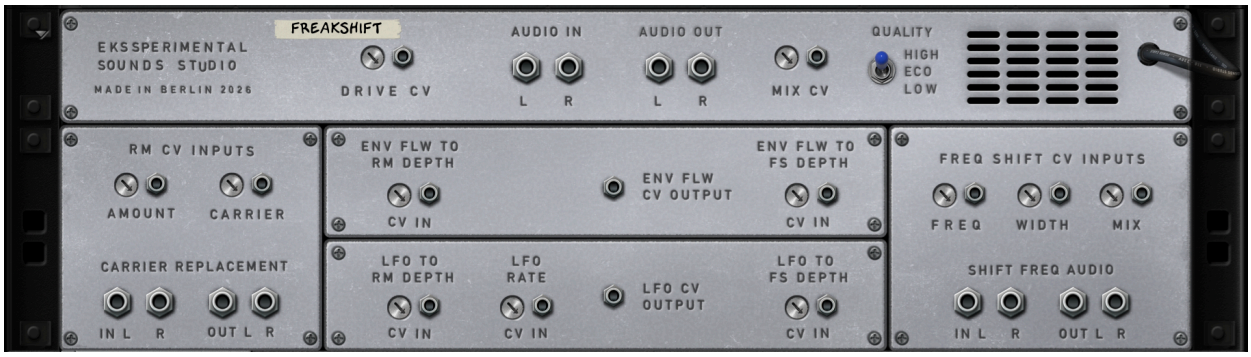
DEPTH / DST → RM: Modulation amount and target for the ring modulator

DEPTH / DST → FS: Modulation amount and target for the shifter

OUTPUT

MIX: Master dry/wet balance for the whole device, 0–100%.

OUTPUT: Final output trim. Centre is unity.



CV / JACKS (backside)

CV inputs: Input Drive, Mix, Ring Amount, Ring Tune, FS Shift, FS Mix, FS Stereo Width, LFO Rate, LFO Depth RM/FS and EF Depth RM/FS.

EF Signal out: Envelope follower CV output, for modulating other devices from FreakShift's input level.

RM Direct In/Out: External carrier input for the ring modulator. Patch in any audio to use it in place of the internal oscillator (+12 dB on the external path).

FS Direct In/Out: Insert point between the ring modulator and the shifter, for patching another effect in series between them.

ROUTING / USAGE EXAMPLES

1) Insert directly on a source for ring or shift colour.
2) Low Ring Tune with full Ring Amount for tremolo and amplitude effects; raise Tune for metallic and bell tones.
3) Small Shift Fine values (1–5 Hz) for slow phasing and detuned shimmer; large values to smear the spectrum or create spaced out metallic bell sounds.
4) High FS Feedback with a small shift for endless rising or falling tones.
5) Patch a drum bus or oscillator into RM **CARRIER REPLACEMENT** to use it as the carrier instead of the internal one.
6) Assign the LFO to Ring Tune or Shift for hands-free movement; set LFO Sync to Host for tempo-locked rhythms.
7) Use the envelope follower so the ring or shift tracks how hard you play.
8) Use **ENV FLW CV OUTPUT** to modulate another device by the input dynamics.