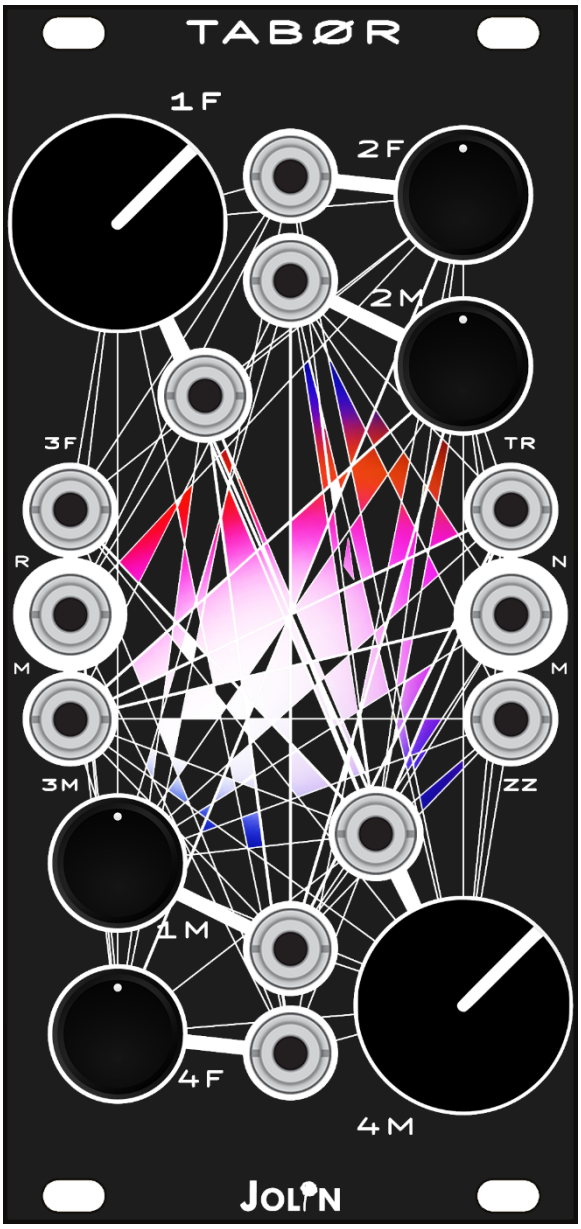
TABØR

rhythmic oscillator

TABØR is an analogue chaotic source based on the unpredictability of four avalanche transistors.



why

- To create complex rhythmic textures and tame them with external CV.
- To explore sonically an unpredictable and chaotic audio source.
- To organically modulate another oscillator.
- To make it scream and embrace the noise.

with

- Other oscillators – as a FM modulation source.
- Resonators – starve the oscillators and create burst of noise to feed them.
- Lush reverbs – let it drone.
- LFOs – modulate all its 9 CV inputs.

how

The principle behind these oscillators is the *transistor reverse avalanche effect*[1].
The result of the FM cross modulation of the whole sound engine is chaotic.

Each oscillator is identified with its color and acts differently in relation to the others:
OSC1 – Green. Percussive and predominant, the fundamental modulator.
OSC2 – Yellow. Follows 1 rhythmically as a carrier.
OSC3 – Red. Strictly related to OSC2 but can set-aside 1 as a modulator[2].
OSC4 – Orange. Act as a shutter to filter or interrupt the whole communication.

RM – oscillators power starve input.

Outputs:
TR – a rectified always positive 0-7v CV source[3].
NM – the main audio signal straight out of the oscillators.
ZZ – an auxiliary fuzzed filtered output from the internal diode-based distortion circuit.

features

- Four avalanche oscillators with frequency pulse and cross-modulation controls.
- CV inputs on all the parameters.
- Starve input to restrict the amount of power supplied to the oscillators.
- Color-coded LEDs to provide clear visual reference for the state of each oscillator.
- Three outputs: TR for gates, NM for audio, and ZZ for a smoothed fuzz output.
- Reverse power protection.

specs

- current draw ⟹ +12V 140ma, -12V 40ma
- dimensions ⟹ width 12HP, depth 25mm

Demos and build documentation at *jolin.tech/tabor*

[1] A capacitor is charged via a current limiting resistor. When the voltage across the capacitor reaches a specific threshold, the transistor enters its avalanche breakdown mode and start exhibits negative resistance (i.e., the higher the current, the lower the resistance). The capacitor then discharges rapidly through the LED and the voltage across drops until the avalanche mode can no longer be sustained. At this point, the transistor stabilizes and becomes non-conductive again. Thus, the cycle continues. The rapid discharging through the LED manifests itself as short blinks. More info and acknowledgement:
Kerry D. Wong, BJT In Reverse Avalanche Mode at http://www.kerrywong.com/2014/03/19/bjt-in-reverse-avalanche-mode
[2] Due to its autonomy from the fundamental OSC1 and to keep the communication balanced, OSC3 it's missing the F and M control potentiometers. Its values can be changed only with external CV inputs.
[3] This output is not always active, it fires gates when the avalanche engine reaches a certain threshold – blue LEDs blinking