(https://www.noiseengineering.us/)

Zularic Repetitor Manual

Dynamic rhythmic generator

Overview

Zularic Repetitor is a rhythmic gate generator based on African music theory. A core pattern forms the basis and variation is achieved by offsetting this pattern in time relative to the base. This module contains 30 mother rhythms from African, Indian, Latin, Funk and Rock roots. Each pattern outputs four parts and allows the offset (controlled by knob or CV) of three parts relative to the mother.

Zularic Repetitor requires only a beat clock to run, but also includes a `Measure` input to resync parts. It also includes two special modes: one turns Zularic Repetitor into a three-section CV/knob-controllable divider, and the other generates random gates where the probability is determined by the knob/CV.

- **Type**: Rhythm Generator

- **Size**: 8HP Eurorack

- **Depth**: 0.8 inch

- **Power**: 2x5 Eurorack

- **+12 V**: `50 mA`

- **-12 V**: `5 mA`

Power

To power your Noise Engineering module, turn off your case. Plug one end of your ribbon cable into your power board so that the red stripe on the ribbon cable is aligned to the side that says `-12 V` and each pin on the power header is plugged into the connector on the ribbon. Make sure no pins are overhanging the connector! If they are, unplug it and realign.
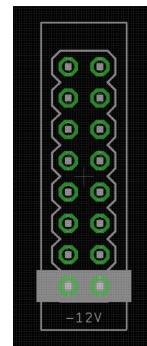
Line up the red stripe on the ribbon cable so that it matches the white stripe and/or `-12 V` indication on the board and plug in the connector.

Screw your module into your case **before** powering on the module. You risk bumping the module's PCB against something metallic and damaging it if it's not properly secured when powered on.

You should be good to go if you followed these instructions. Now go make some noise!

Noise Engineering modules are reverse protected. If you accidentally installed it with the red stripe up, simply remove the power and place it correctly.

A final note. Some modules have other headers -- they may have a different number of pins or may say "not power". In general, unless a manual tells you otherwise, **do not connect those to power**.

Input & output voltages

Zularic Repetitor's trigger inputs trigger around `2.5 V`. Its CV inputs have a range of about `7 V` and its outputs are around `6 V`.

Interface

Mother

The `Mother` knob selects the pattern set that is output. The current patch is displayed on the LEDs near the center top. A key to the patterns is included later in the manual. The knob acts as an attenuator for the input CV.

Child 1-3

The `Child` knobs control the offset in beats of each part versus the mother rhythm. The knob acts as an attenuator for the input CV.

World

The `World` switch selects which bank of patterns to use. They are grouped by world. `Old world` contains Indian, African and African relatives such as Vodou. `New world` contains Funk, Rock and other more modern rhythms. The status of the `World` switch is indicated by the orange LED.
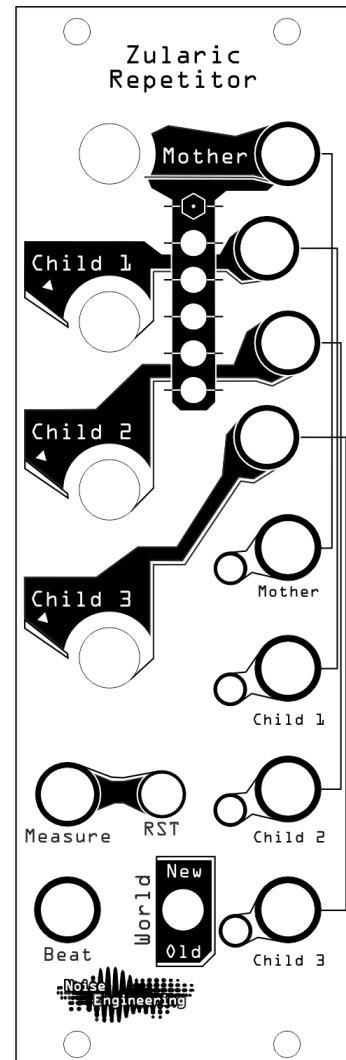
Beat

The `Beat` input is a clock input that advances the time on the rising edge and returns any active gates to zero on the falling edge.

Measure

The `Measure` input resets the beat to the start of the measure on a rising edge.

RST

The `RST` button will pause the advancement of time while depressed and when released reset the time back to the start of the measure.

Mother output

`Mother` outputs a `6 V` low impedance gate suitable for controlling most any gate driven device.

Child 1-3 outputs

`Child` outputs a `6 V` low impedance gate suitable for controlling most any gate driven device.

Patching suggestions

The simplest way to get to know Zularic Repetitor is to simply patch a master clock into `Beat` and connect each of the four outputs to the gate of four different percussion modules. You can get an idea of the patterns included by adjusting the `Mother` knob and a feel for how the time offset works by playing with the `Child` knobs.

The next step is to patch a CV. A CV sequencer or just a simple gate input are both useful for controlling either the `Mother` pattern or the `Child` offset. These can be used to generate a wide variety of related rhythms and dynamic variations. A simple CV example is to take the beat clock being sent to Zularic Repetitor and

divide it by 64. Send this divided beat in to one of the `Child` inputs. Adjust the related `Child` knob to control the amount of time offset that occurs to the `Child` every 64 beats.

Many more complicated schemes are possible to dynamically vary the rhythms. Any slow control voltage or gate might produce an interesting variation!

Design notes

The African and African-derived rhythms come from the music theory book *Rhythm and Transforms* by Sethares, and the terminology comes from his work as well. Sethares's taxonomy appears to be mostly based on King's work (an ethnomusicologist and the namesake of the king rhythm), though are obviously simplified to work in a modular format. The core variation technique of offsetting the first beat in time is very common in music throughout Africa; in many ways, this is more important to the module than the rhythms themselves.

The Indian references were transcribed by ear from a Hindustani drum machine Stephen borrowed from a friend, and the names of these patterns come from the presets on the drum machine. These machines are available online and we learned a lot from the one we had access to if you are curious about them.
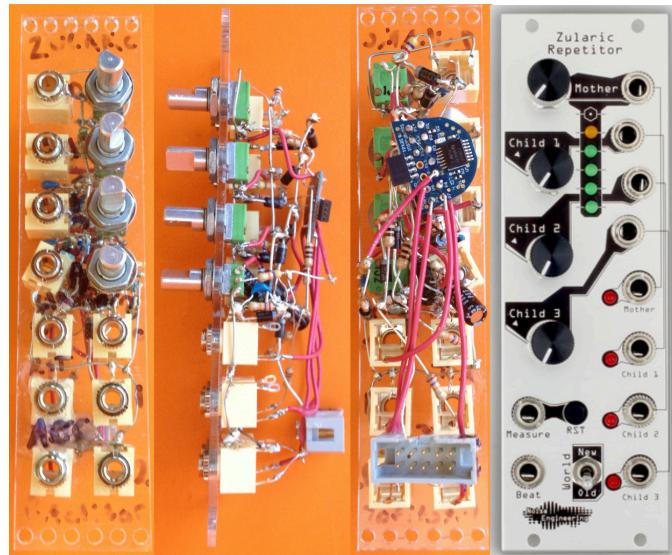
New world patterns

MOTORIK 1
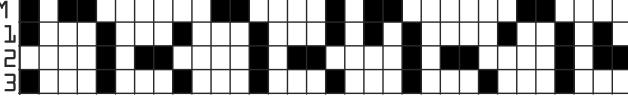
MOTORIK 2
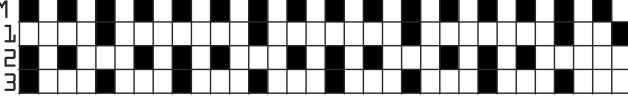
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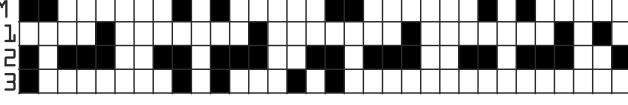
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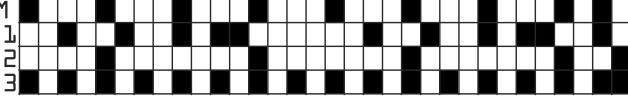
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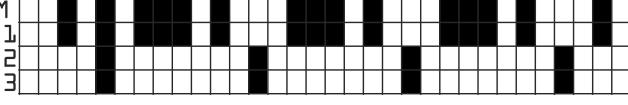
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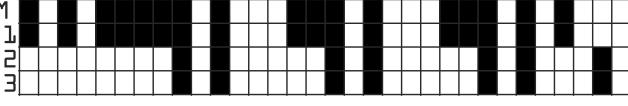
POP 4

FUNK 1
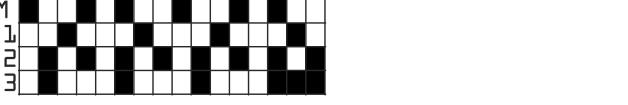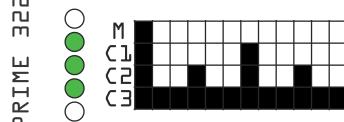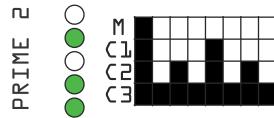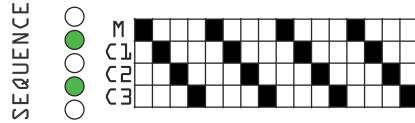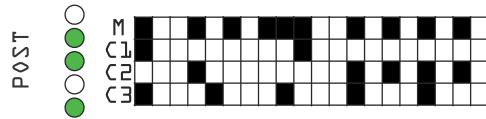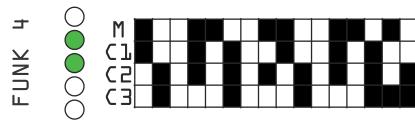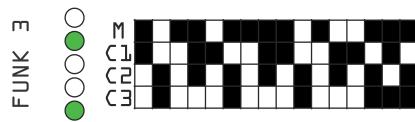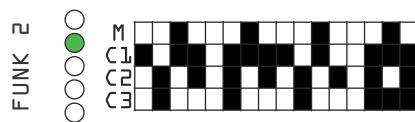
FUNK 2

FUNK 3

FUNK 4

POST

SEQUENCE

PRIME 2

PRIME 322

RANDOM

```
M  BEAT at 25% probability
C1 BEAT at probability given by C1 (CV/knob)
C2 BEAT at probability given by C2 (CV/knob)
C3 BEAT at probability given by C3 (CV/knob)
```

Old world patterns

KING 1
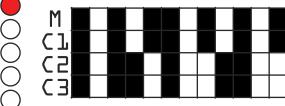
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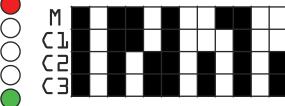
KROBOTO
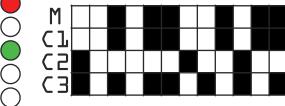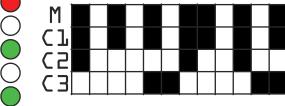
VODOU 1

VODOU 2

VODOU 3

GAHU

CLAVE

RHUMBA

M
C1
C2
C3

JHAPTAL 1

M
C1
C2
C3

JHAPTAL 2

M
C1
C2
C3

CHACHAR

M
C1
C2
C3

MATA

M
C1
C2
C3

PASHTO

M
C1
C2
C3

PRIME 232

M
C1
C2
C3

DIVIDER

M BEAT divided by four
C1 BEAT divided by C1 (CV/knob) (1-32)
C2 BEAT divided by C2 (CV/knob)(1-32)
C3 BEAT divided by C3 (CV/knob)(1-32)
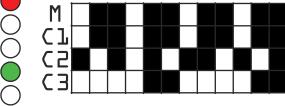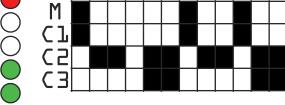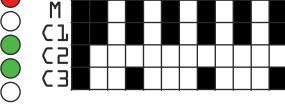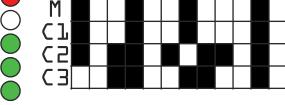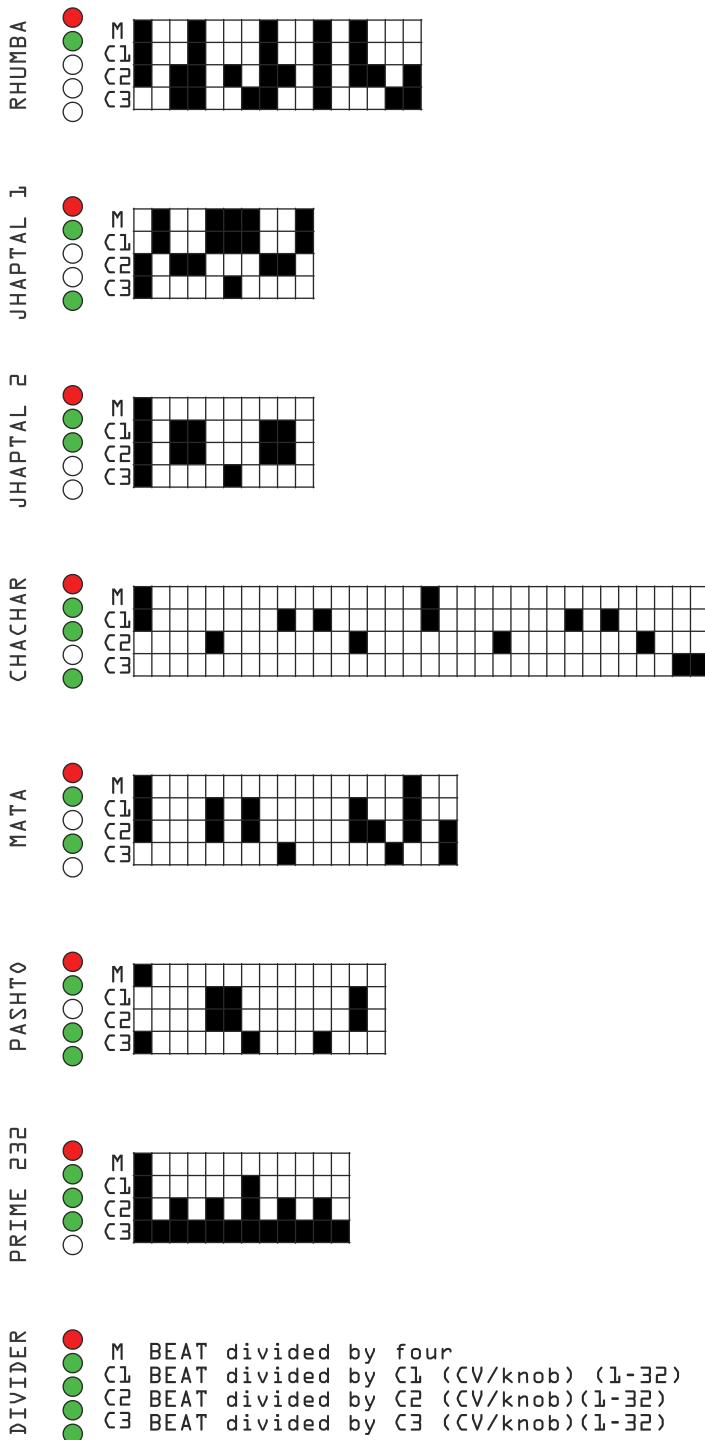
Warranty

We will repair or replace (at our discretion) any product that we manufactured as long as we are in business and are able to get the parts to do so. We aim to support modules that have been discontinued for as long as possible. This warranty does not apply to normal wear and tear, including art/panel wear, or any

products that have been modified, abused, or misused. Our warranty is limited to manufacturing defects.

Warranty repairs/replacements are free. Repairs due to user modification or other damage are charged at an affordable rate. Customers are responsible for the cost of shipping to Noise Engineering for repair.

All returns must be coordinated through Noise Engineering; returns without a Return Authorization will be refused and returned to sender.

Please contact us (https://noiseengineering.us/pages/contact) if you think one of your modules needs a repair.

Special thanks

- Shawn Jimmerson
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