MAKING FRIENDS WITH YOUR NEW MACUMBISTA BENJOLIN

V 1.2 August 2024

SIGNAL OUTPUTS

Oscillator 1 : Triangle

Oscillator 1 : Pulse

Oscillator 2 : Pulse

Oscillator 2 : Triangle

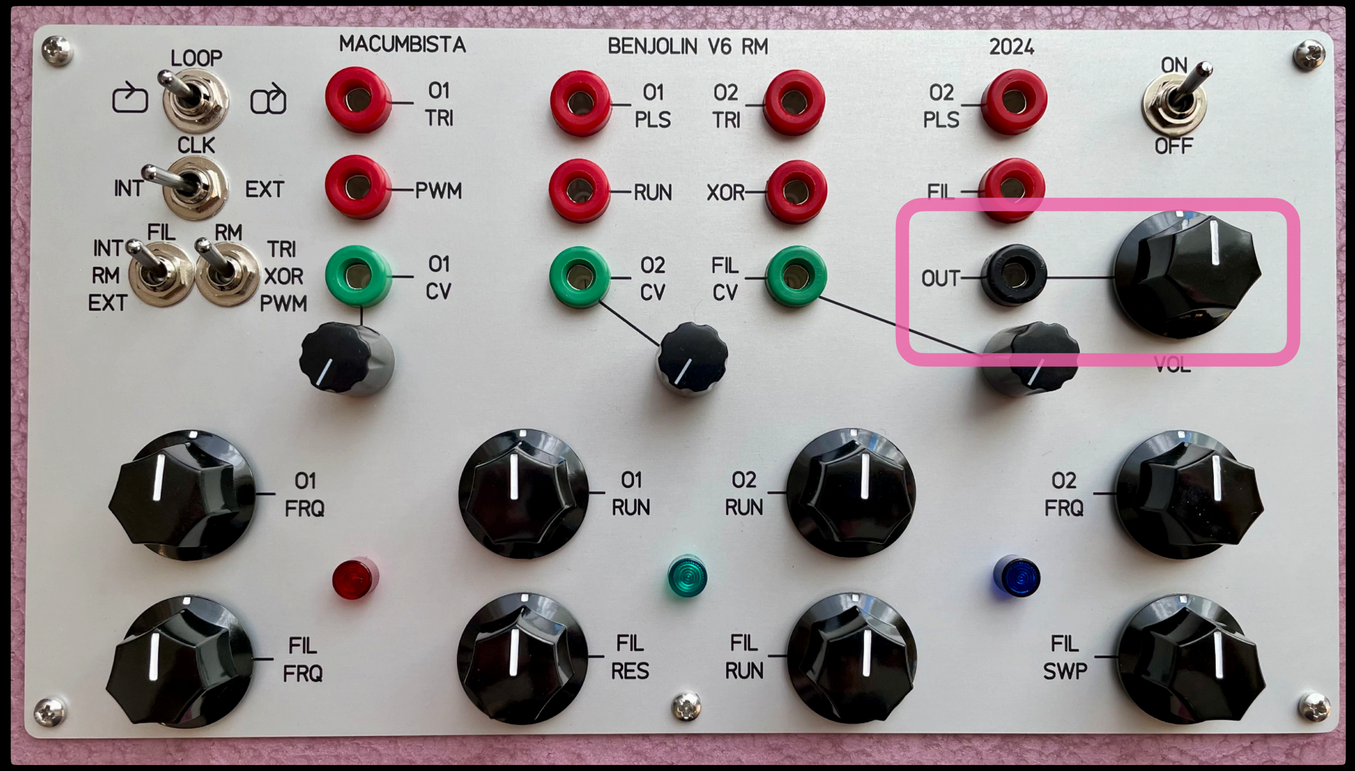
Pulse Width Modulation

Rungler

eXclusiveOR

Low Pass Filter

INSTRUMENT OUTPUT 1

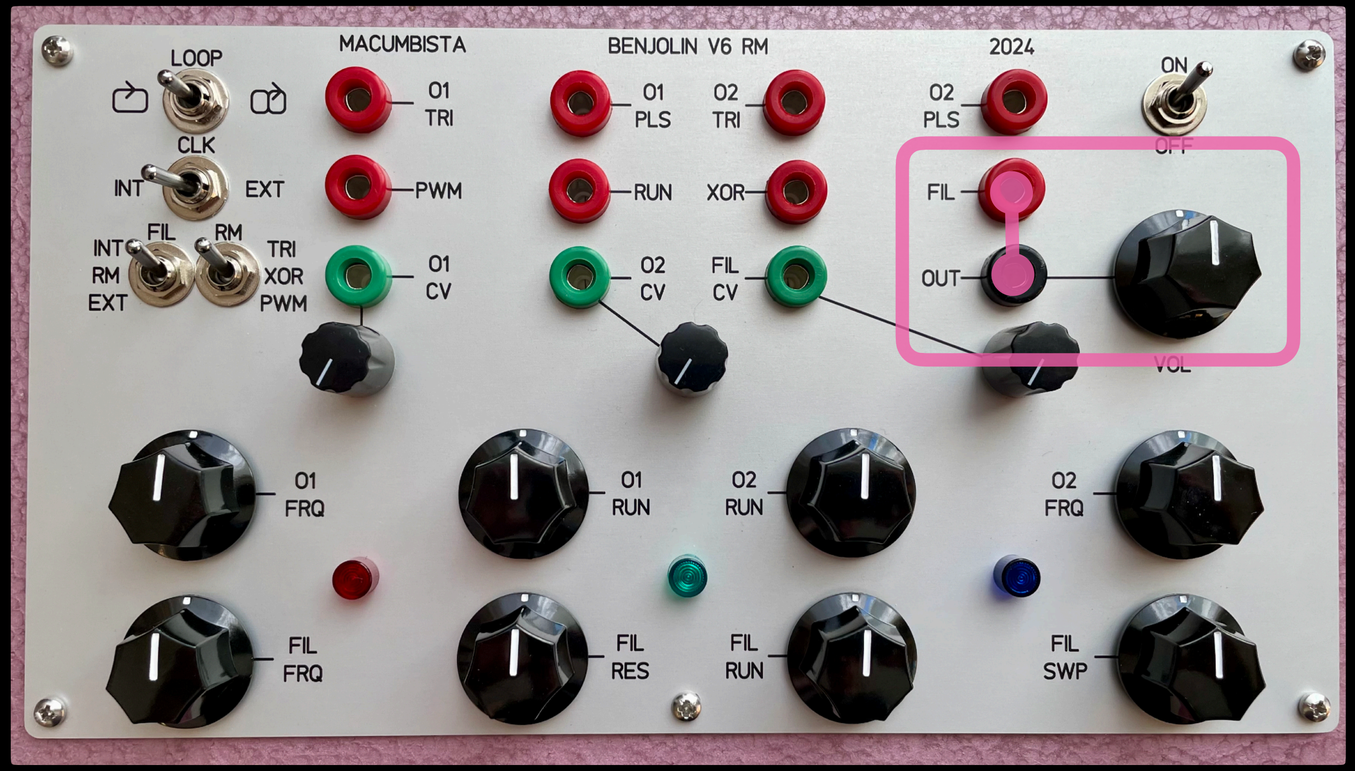


Connect one signal output to the OUT banana jack.

The VOL volume knob controls the level of the signal sent to the main OUT 6.3mm jack in the rear panel.

NOTE: you won't get any output from the instrument if nothing is patched here!

INSTRUMENT OUTPUT 2



For most purposes, including processing external signals through the Filter, make this output connection with the banana cable.

NOTE: the Filter output signal is line level. The other output signals are substantially higher than line level! Use the volume knob when changing the patching.

CONTROL INPUTS

Knobs control amount of modulation from external voltage sent from other devices to the control input banana jacks.

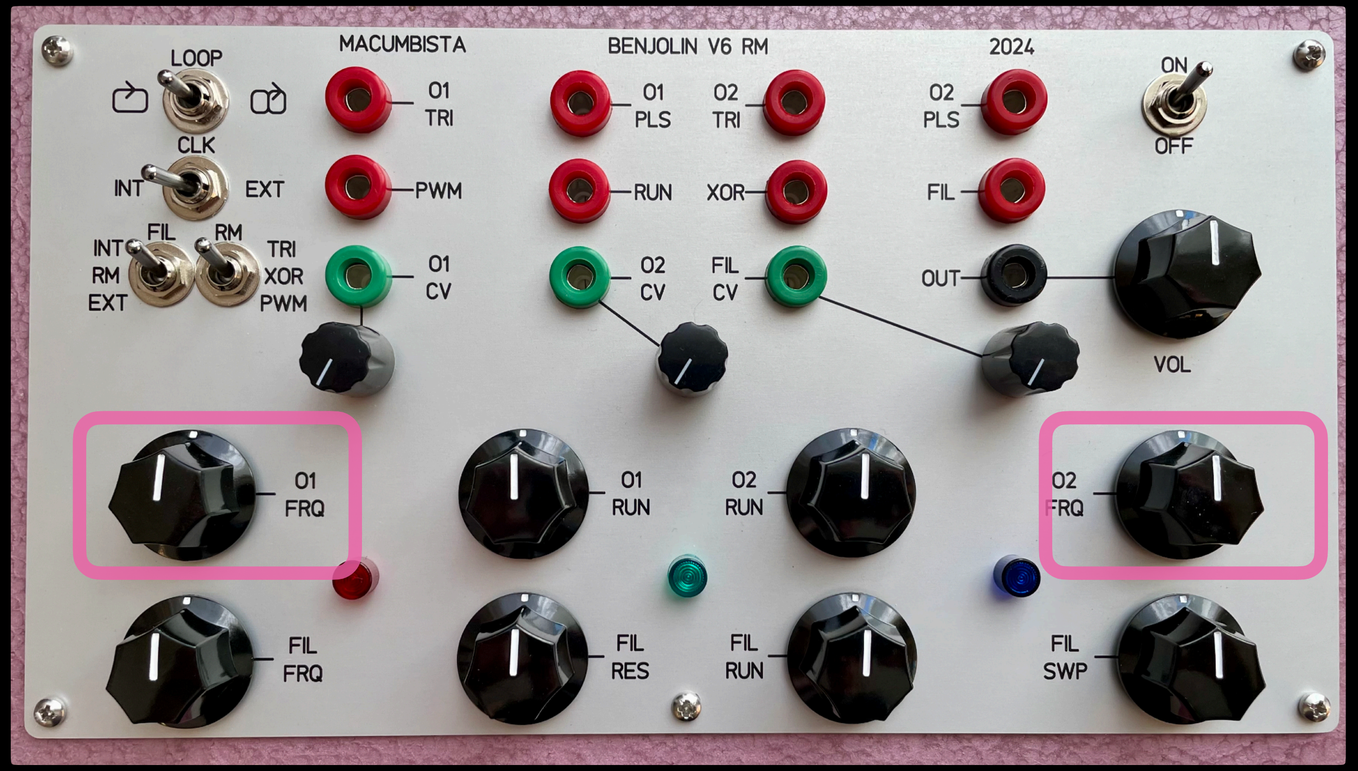
Do not exceed +/-9V on any input!

You can also send internal signal outputs to the control inputs.

The knobs adjust the amount control signal input.

Oscillator 1 : Frequency Oscillator 2 : Frequency Filter : Frequency

OSCILLATOR CONTROLS



Oscillator 1 : Frequency

Oscillator 2 : Frequency

FILTER CONTROLS 1

Filter: Cut Off Frequency

Filter: Resonance

Filter : Sweep

(from O2 TRI)

FILTER CONTROLS 2

The FIL filter input switch selects the source of the Filter.

INT internal selects the Benjolin PWM pulse width modulation signal.

EXT external selects the audio input jacks at the back panel.

The middle RM position selects the audio input jack run through the Ring Modulator

RINGMOD CONTROLS

The RM Ring Modulator input switch selects which carrier signal is ring modulated by the external audio before it goes through the Filter.

Top is the triangle signal of Oscillator 1

Center is the XOR signal

Bottom is the PWM pulse width modulation signal

In an ideal world there would be about 80 dB of suppression of the carrier signal (internal Benjolin oscillator) at the output when no modulator signal (from the external input) is present.

In the reality of a messy analog circuit, there is much less suppression. If you require silence at the ringmod output when no external signal is present, I would recommend using an inexpensive noise gate effect pedal (such as the Behringer NR300) to achieve this.

RUNGLER CONTROLS 1

The RUN Rungler is a pseudo-random stepped voltage sequence which can be used to control other parts of the synthesizer:

– O1 RUN = Oscillator 1 frequency

– O2 RUN = Oscillator 2 frequency

– FIL RUN = Filter cut off frequency

The Rungler sequence is made from digital bits passed along three steps . The LEDs show the status of each step (HI/LO).

Rungler to Oscillator 1 Frequency

Rungler to Oscillator 2 Frequency

Rungler to Filter Frequency

Oscillator 1 feeds bits into the Rungler steps. Increasing its frequency increases the variation in the sequence.

Oscillator 2 is the clock for the Rungler. Increasing its frequency increases the rate of change in the sequence.

RUNGLER CONTROLS 2

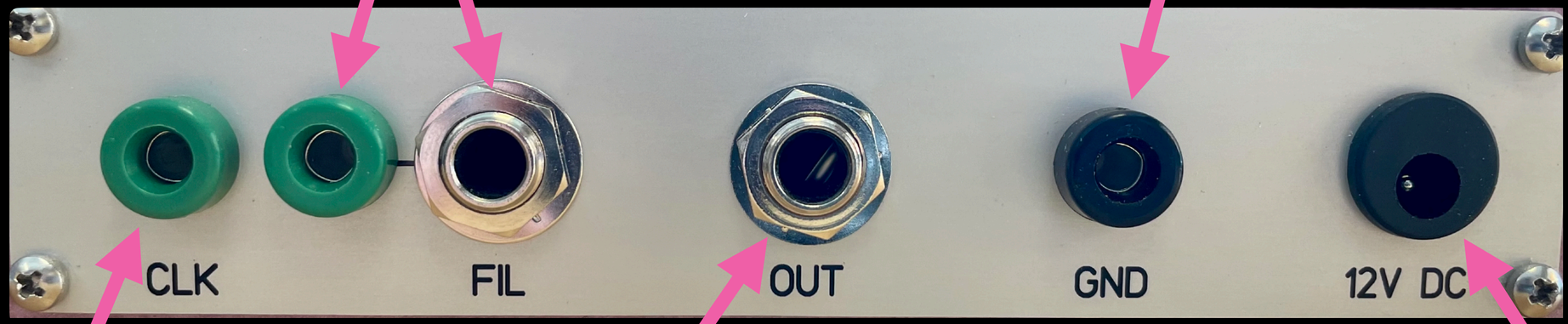
The LOOP switch locks a pattern in the Rungler, either looping forward or forward then backward. Oscillator 2 will still increase or decrease the speed of the pattern in the loop.

The CLK switch selects an INT internal clock for the Rungler (Oscillator 2) or an EXT external clock (connected at the rear panel).

REAR PANEL

The two FIL input jacks send external signals to the filter and ring modulator. The banana jack is for modular level inputs. The 6.3mm jack is for line level inputs. Use a preamp for microphone signals sent to the line input.

The GND banana jack is used to connect the grounds of different instruments you want to plug into the Benjolin.

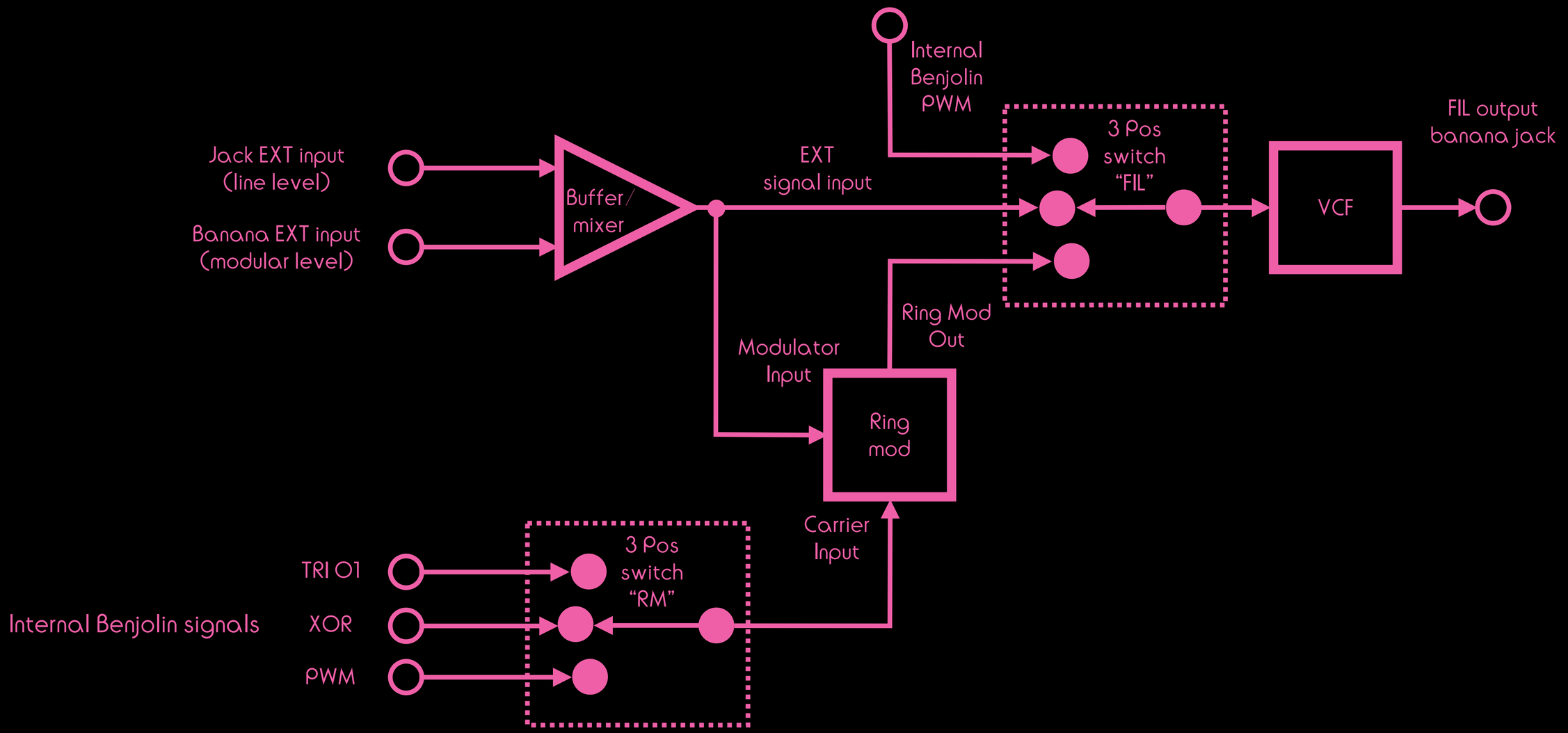


The CLK input accepts an external signal as clock for the Rungler, Any signal crossing the threshold of approx 1V will trigger it, try it with drum tracks!

The OUT 6.3mm jack outputs whatever is connected to the OUT banana jack on the front panel, passed through the VOL knob.

The 12V DC jack is used to power the instrument. Use the DC adapter provided, or one with 1 Amp current available (center positive jack).

RING MOD / FIL DETAILS



ENJOY!

MACUMBISTA@GMAIL.COM

HTTPS://MACUMBISTA.NET/WP-CONTENT/UPLOADS/2020/08/BENJOLIN2020INSTRUCTIONS.TXT

Benjolin circuit by Rob Hordijk (2009)