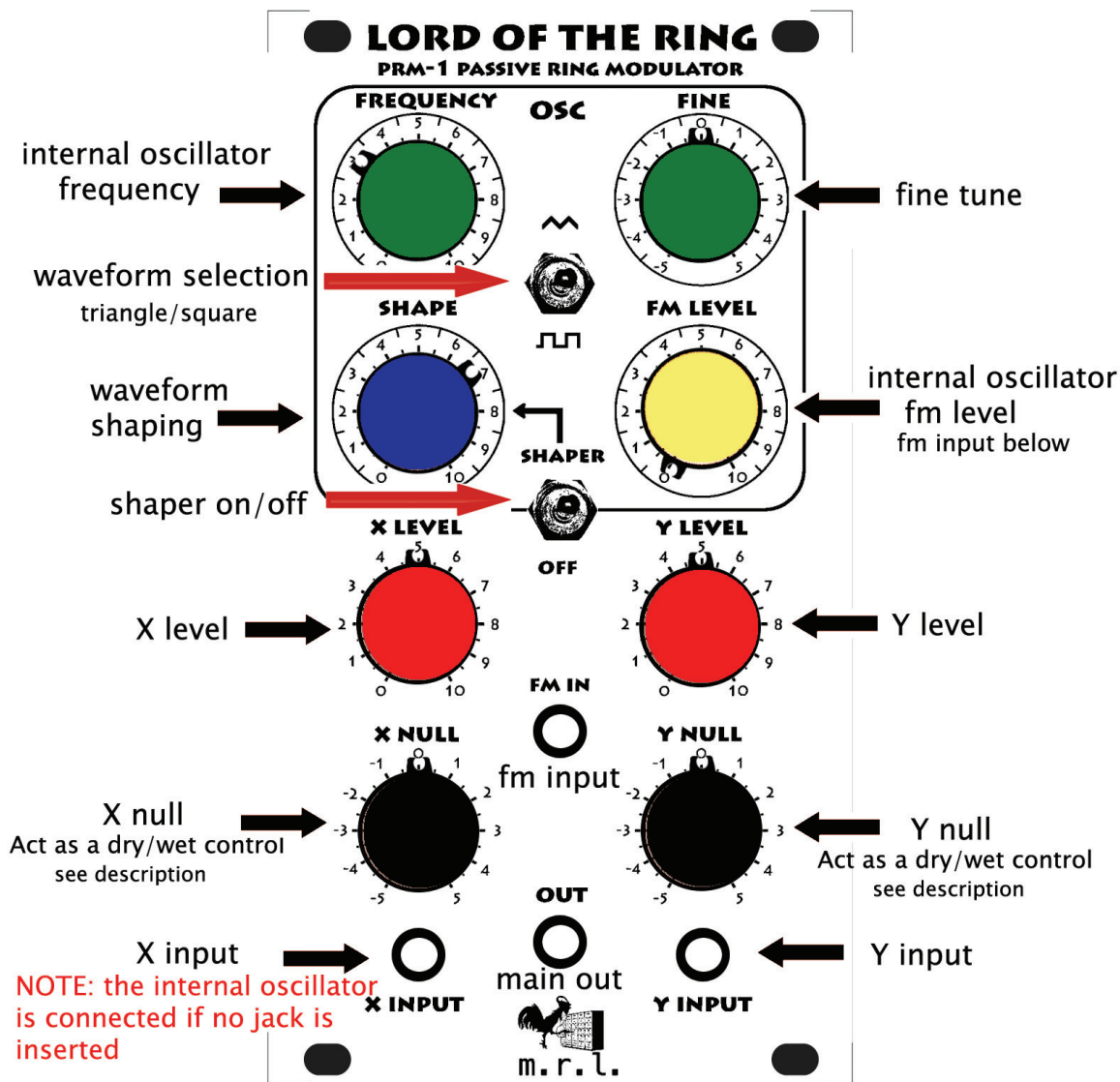


# M.r.I. Lord of the Ring User Manual

Mad Rooster Lab    PRM-1  
User manual    Rev. 1.1



# QUICK START



## FEATURES

- Real passive ring modulator
- Hand Matched NOS Germanium diodes
- Built-in carrier VCO (Tri-Square) + Waveshaper
- Null pots (act like a dry/wet on both inputs)
- Standard Eurorack format and power

## THE MODULE

PRM-1 is an "all analog" module based on a real passive ring modulator with a built-in carrier oscillator.

This means you can use only one signal to drive the modulator, instead of two signals as required by a normal ring modulator.

In addition, it can be used as a normal ring modulator; by simply connecting 2 sources to the respective inputs (this will exclude the built-in oscillator).

The X input (carrier) is a normalized input, so if no jack is connected the built-in oscillator goes to this input.

The 2 inputs are electronically buffered in order to minimize the impedance mismatching between various sources (oscillators, drum machines, synthesizers etc.)

## THE MAIN CORE

The core of the module is the passive ring modulator, a traditional design with transformers and germanium diodes; being all analog components they are very sensitive to levels (voltages) and that's why we add the volume controls.

In normal operation the signals going through the transformers should be 2-3Vpp on both inputs; as the signal increases the transformers and the diodes will begin to distort and the resulting signal will be *harmonically even* (which can be desirably).

Some oscillators have 4-5Vpp swing while others are quite low, so pay attention when you adjust the input volumes; especially when you use different sources.

## THE OSCILLATOR

The built-in oscillator features 2 selectable wave shapes; triangle and square. In addition, a special "shaper" can be inserted into the oscillator to add harmonics, giving a rich "filter-like" sound. It is capable of wonderful sounds when used properly (see Tips and Tricks below).

The oscillator can be voltage controlled using the Modulation input (buffered); oscillator out level is about 2.5Vpp on both wave shapes.

## NULLS

Being passive, a part of the dry signal will pass through the modulator even if there is no signal to the other side (both carrier and modulator). To compensate this, two null potentiometers were added to suppress the dry signal; these will act basically as dry/wet control over the two inputs, so it can be useful for creative effect too (eg. a drum loop with dry/wet at 50% will retain the punch of the original sound).

The null pots act in a different way from the others pots; they are not standard 0-10 where 0 is dry and 10 is wet.

The wet point is somewhere in the middle depending on what's connected to the source.

Going to the extremes of a potentiometer will result in a more dry sound.

To better understand this, below is a simple example:

- connect a source to the Y input (preferably an oscillator)
- turn down the 2 inputs levels and set the null pots in the middle
- turn up the X level, you should hear something
- adjust the X null where the signal is most quite
- turn the X level down and leave the X null in that position
- do the same with Y

At this point you can turn up both X and Y levels and hear the sound 100% processed; as you go to the extremes of the null pots the sound level becomes more loud as the dry part of the signal is added.

## INSTALLATION

PRM-1 is designed to be used within the euro format modular synthesizer system (Euro-rack);

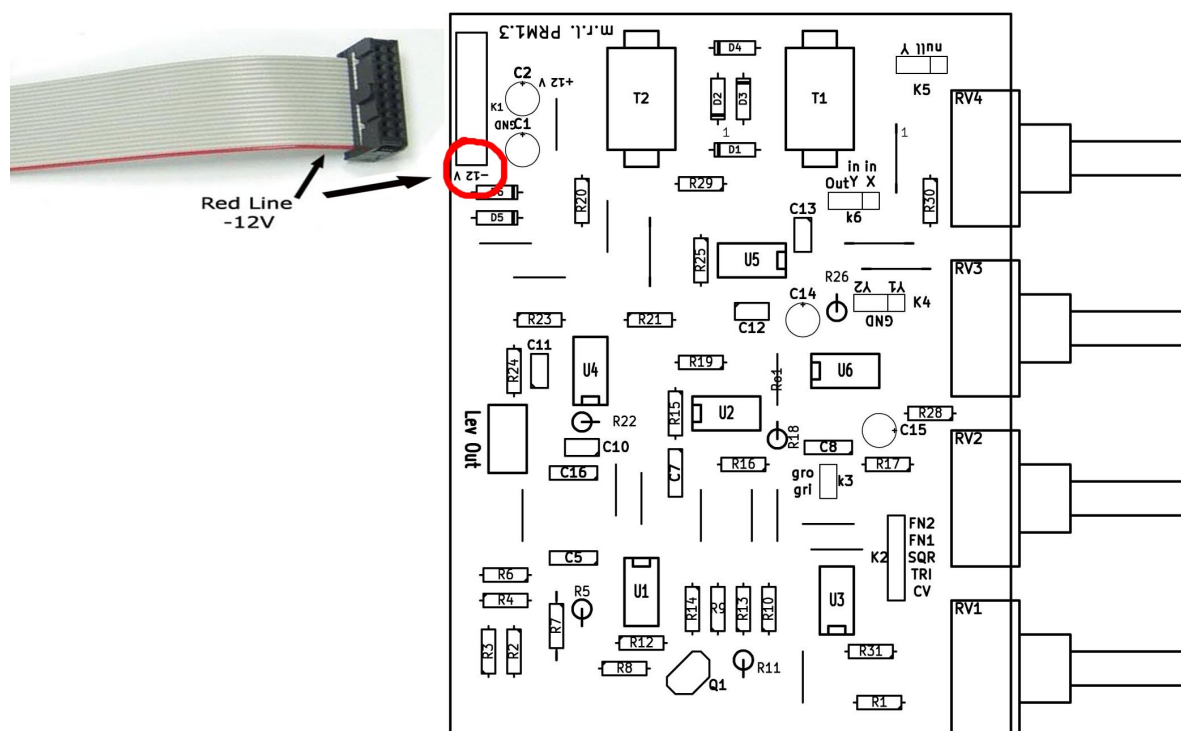
For more info about this format please go to: [www.doepfer.com](http://www.doepfer.com)

It requires 40mA of +12/-12 using the standard 8X2 flat connector, where the red line is the negative voltage -12 (see the picture below).

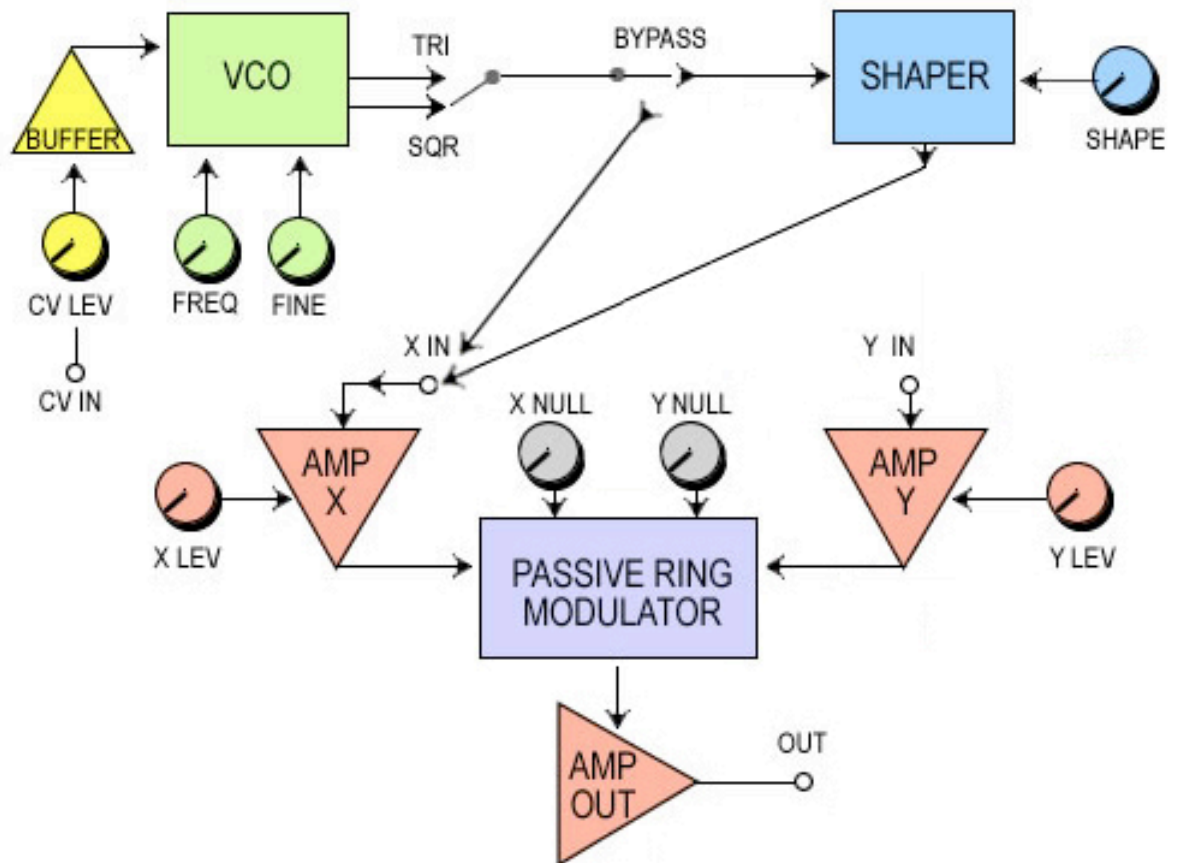
To install the module in your Euro-rack system requires 14HP (7cm) of space.

M.r.l. decline any responsibility for harm to persons or apparatus caused by an incorrect operation/installation of this module.

M.r.l. is NOT responsible for harm caused by a DIY enclosure and/or power solution.



## BLOCK DIAGRAM



For any question, comments or request please contact:  
[info@madroosterlab.com](mailto:info@madroosterlab.com)

## TIPS AND TRICKS

### Shaper tricks

The built-in waveshaper is an incredible tool to shape sounds.

Start with a low frequency signal in the modulator input (Y) and turn on the shaper.

Set the built-in oscillator to square and the frequency to about 10 o'clock; now play with the shaper and make a sweep!

The shaper seems to work best when the Y input is quite low and the built-in Vco is mid-high in frequency.

Turning the frequency of the built-in Vco to the extreme can lead the shaper to produce some unpredictable sounds!

### Ring Drum

Run a drum or a rhythmic pattern through the modulator input Y.

Turn the frequency of the built-in Vco until you find a good frequency.

Here you can find the fine pitch pot useful to be perfectly in tune with your material (the snare peak frequency, for example).

Experiment with the Y null pots and blend to taste.

Adding a subtle LFO to the Modulation CV in can give you more movement.