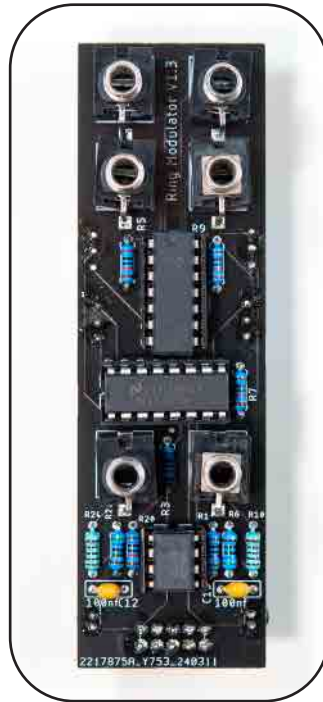


Dual Ring Modulator V1.3

The Dual Ring Modulator Eurorack PCB and Front Panel Kit is a compact DIY module designed for creative audio processing and synthesis experimentation. Built around the versatile LM13700 IC and inspired by its datasheet circuitry, this ring modulator offers straightforward operation with flexible tonal control.

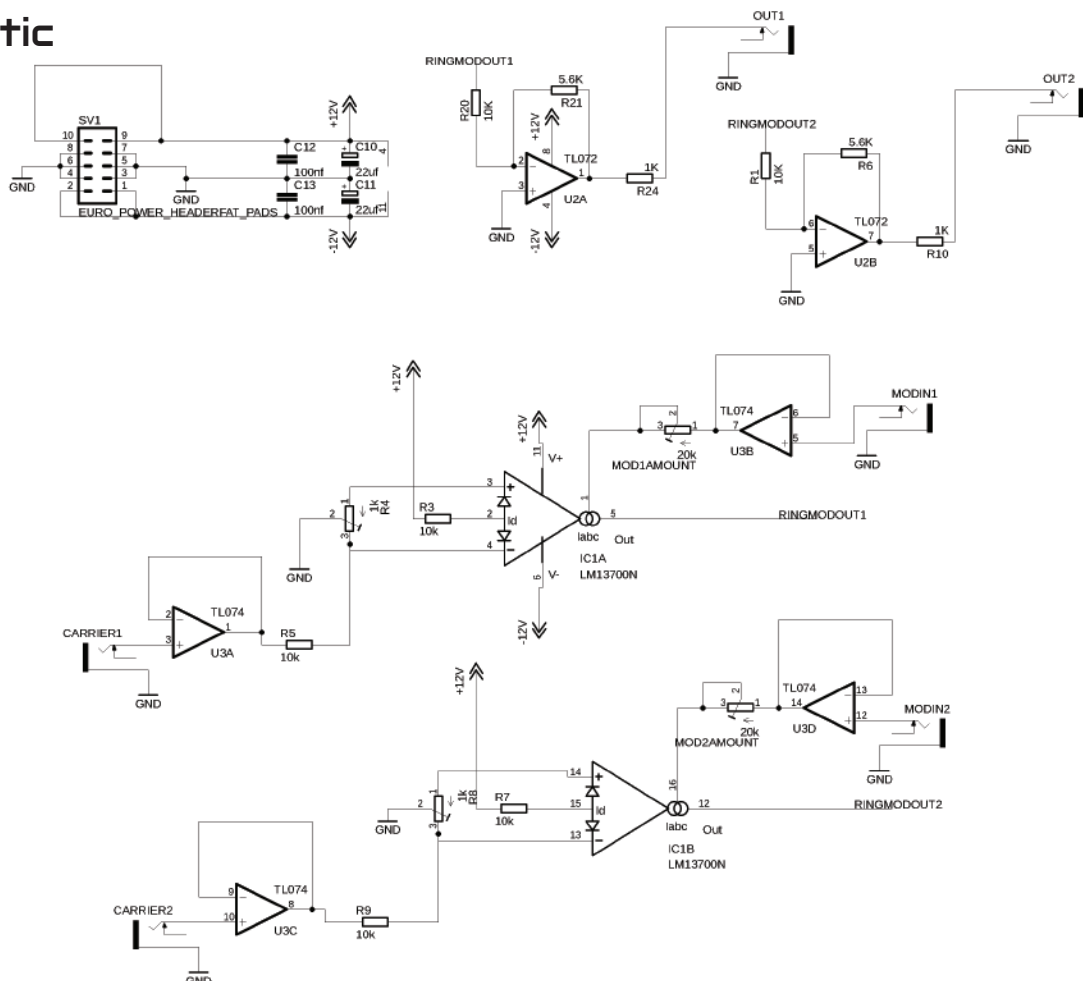


Bom

Qty	Value	Part Number
2	100nf	C12, C13
2	10K	R1, R20
4	10k	R3, R5, R7, R9
2	1K	R10, R24
2	1k - Trimmer	R4, R8
2	20k - Trimmer	MOD1AMOUNT, MOD2AMOUNT
2	22uf	C10, C11
2	5.6K	R6, R21
1	10 Pin IDC Socket / Euro Power	SV1
1	LM13700N	IC1
6	PJM398SM / Jack Socket	CARRIER1, CARRIER2, MODIN1, MODIN2, OUT1, OUT2
1	TL072	U2
1	TL074	U3

Use capacitors rated 25V or higher.

Schematic



Calibration

1. Mod Amount (Carrier Null) (20K)

1. Apply a 1 kHz sine wave to the Carrier input.
2. Ground the Modulator input.
3. Monitor the output on an oscilloscope or audio monitor.
4. Adjust T1 for minimum 1 kHz signal at the output.
Set for the deepest possible null.

2. Modulation Symmetry (1K)

1. Apply:
Carrier: 1 kHz sine
Modulator: 100–200 Hz sine
2. Observe the output waveform.
3. Adjust Symmetry until:
The waveform is symmetrical around 0 V.
Modulation is strong and clean.
No obvious carrier bleed is visible.

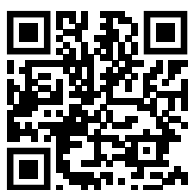
Final Check

Re-check Mod Amount briefly, as trims may interact slightly.

Calibration is complete when:

Carrier alone is minimized.

With both inputs present, output contains only sum and difference frequencies.



Thanks you for choosinf Guru Gara Synth.
For more information please contact info@gurugarasynth.com