

Wave Folder V1.5

The Dual Wavefolder Eurorack PCB and Front Panel Kit is a transistor-based harmonic processor featuring two identical, independent folding circuits. Each folder utilizes two stages of transistor-based folding to provide deep control over wave manipulation, allowing you to transform simple oscillators into complex, harmonically rich soundscapes.

What is a Wavefolder?

In modular synthesis, a wavefolder is a tool for additive harmonic processing. While a filter removes frequencies, a wavefolder adds them by "folding" the peaks of a waveform back onto itself once they cross a specific voltage threshold. This process generates new harmonics, resulting in the metallic, complex, and "rubbery" timbres often associated with West Coast synthesis.



Bom

Qty	Value	Part Number
1	78L05	78L05
1	10 Pin IDC Socket	Eurorack power connector
12	100K	R5, R21, R22, R30, R32, R33, R47, R48, R49, R50, R57, R59
4	100K - Trimmer	R53, R55, R61, R64
4	100R	R18, R29, R51, R52
4	100nf	C2, C4, C12, C13
8	10K	R6, R12, R19, R38, R43, R45, R54, R56
2	10pf	C5, C6
2	10pf	C1, C3
2	10uf	C7, C8
1	10uf	C17
1	150K (Labeld as 150 on PCB)	R11
1	150K (Labeld as 150 on PCB)	R24
2	1K	R62, R63
4	1N4148	D1, D2, D3, D4
2	1nf	C9, C14
16	20k	R1, R2, R3, R4, R7, R8, R9, R10, R34, R35, R36, R37, R39, R40, R41, R42
2	220K	R20, R46
4	220R	R15, R16, R26, R27
2	220nf	C15, C16
2	22K	R13, R44
2	22uf	C10, C11
2	24K	R58, R60
4	2N3904	T1, T2, T3, T4
6	2N3906	Q1, Q2, Q4, Q5, Q6, Q7
2	4.7K	R65, R69
8	47K	R17, R23, R28, R31, R66, R67, R68, R70
2	6.8K	R14, R25
4	B100K	CV1AMOUNT, CV2AMOUNT, GAIN1, GAIN2
1	LM13700N	IC1
6	THONKICONNOLD	CV1, CV2, IN1, IN2, OUT1, OUT2
1	TL072	U4
3	TL074	U1, U2, U3

Use capacitors rated 25V or higher.

Calibration

To get the most musical results from your Dual Wavefolder, precise calibration of the internal trimmers is required. We recommend using an oscilloscope and a simple Sine or Triangle wave for this process.

1. Gain Adjustment (R53 & R55)

The Gain trimmers determine the "threshold" of the folding effect. You want to set the baseline gain so that the signal is just on the verge of folding when the front panel Fold knob is at its minimum.

Step A: Connect the output of a channel to your oscilloscope.

Step B: Set the front panel Fold pot to its lowest setting.

Step C: Adjust the Gain trimmer (R53 for Channel 1, R55 for Channel 2) until you see the clean, unfolded waveform.

Step D: Slowly turn the trimmer up until the peaks of the wave just begin to fold, then back it off slightly to the point immediately before the fold starts.

2. Symmetry Adjustment (R61 & R64)

Once the gain is set and the folding begins, you may notice the top and bottom of the waveform folding at different times or intensities.

Step A: Increase the front panel Fold control until the waveform is clearly folding.

Step B: If the folding looks lopsided or uneven, adjust the Symmetry trimmer for that channel.

Step C: Fine-tune the trimmer until the peaks and valleys of the waveform fold at the same time, achieving a perfectly symmetric harmonic structure.

Note: *Because this is a transistor-based design, the "sweet spot" can be sensitive. Take your time with these adjustments to ensure both channels of your Dual Wavefolder respond identically to your CV sources.*

Schematic



