



TOPPOBRILLO M M CO
TRIPLE WAVEFOLDER USER GUIDE
 REV. 1

The Triple Wavefolder module contains three independent, voltage-controlled waveshapers that were designed to accomplish simple but useful waveshaping tasks, as well as combine to produce a nearly infinite variety of complex non-linear synthesis functions such as those implemented by the Buchla and Serge modular systems in the 70's.

Normalized signal routing (see block diagram, p2) allows for user-selected operation such that the TWF can be used in several configurations. The normalization from stage to stage is simple and should be easy to follow. OUT 1 is routed to IN 2 and OUT 2 is routed to IN 3. These series connections are broken when plugging into IN 2 or IN 3 (see block diagram, p2). As a simple example, this normalization allows WF 1 to be used as a simpler processor for a SOURCE 1 while WF 2 and 3 are used as a more complex processor for a SOURCE 2.

THE FOLDERS

The three wavefolding stages are nearly identical- with the exception of a few features related to their implementation:

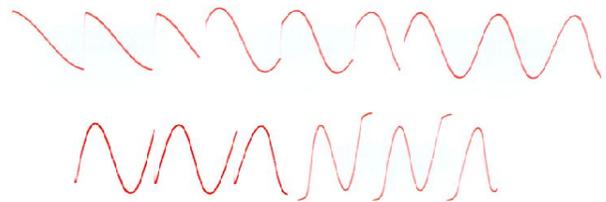
WF 1 has two inputs, IN1A & IN1B. IN1B has an attenuator. This input an is normalled to function as an offset when not in use, the knob acts to adjust the amount of DC offset input to WF1. This is useful, as it acts to control the symmetry of the output function. See picture below for an idea on how this affects waveform processing.



WF 3 has an extra clipping stage that follows and squares up OUT 3. This is the PULSE output and it can be used to trigger and/or gate modules requiring such, as well as be used as an audio source. The output range is approx. 0-7V.

The input[s] to each waveshaping stage are optimized for 10V P-P sources as per usual for most modular VCOs, however any signal can be processed, according to your application. The TWF is DC coupled throughout, so it is able to process LFOs/ envelopes and static control signals as well.

The wavefolding process of a single stage is illustrated below, the input signal in the illustration is a 10V P-P sawtooth wave.



As you sweep the control, the sawtooth folds over, eventually connecting in the middle, forming a sine-wave just before mid-rotation of the knob. Further, the folding continues through the center until the peak and trough of the new waveform are limited by the limiting network in the output stage. This network limits the output to approx. +/- 6.2V.

CONTROLS AND CONTROL INS

Each stage has a control input as well as a BIAS knob to set the initial amount of processing for that particular stage. The control inputs are normalled to the ALL control section (See below). The ALL control for a stage is interrupted when plugging into that stage's control input (see block diagram, p2). These inputs are summed with the BIAS control knob level. The control range is 0 to +8V.

The ALL control section is comprised of two control inputs- one of which has no attenuator (at max. sensitivity) and the other which is processed by the inverting attenuator control next to it- as well as a MANUAL control knob.

The sum of all of these parts is apportioned to the three wavefolder stages via the normalization scheme. WF 2 and 3 are slightly less sensitive to ALL CV than WF1- this is to prevent the network from clipping too early when using the WFs in series.

APPLICATIONS/ PATCH EXAMPLES

Sorry not here yet! Content will be added as time permits.

Experiment- Mix audio and control signals.. you can modulate at audio rates for “ring modulator” type sounds.. pulses too... FM your VCO and process thru the TWF for nicer FM tones.. create morphing rhythms with a simple LFO thru the TWF.. try some feedback!

THANKS!

Thank you for buying a TWF! Drop us an email to register your unit for warranty purposes at the address listed below. Please include your:

- NAME
- SERIAL# (stuck on the rear of unit)
- PURCHASE DATE

email:info@toppobrillo.com (subject line: warranty)

Your unit was built and tested by human hands in Oakland, CA USA- if you find anything to be amiss, damaged, or non-operational, please let us know right away. We warranty all units from manufacturing defects for up to 1 year from the purchase date.

This warranty does not, however, include any type of user-caused damage, such as physical damage or improperly connecting the unit to a power source. We will service these issues at a cost that will be determined according to the type of service needed.

Please treat with care! don 't reverse the power, the PCB is clearly labeled! (red stripe should be up when connected to rear of module)

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