

ULTRAFOLD

ULTRAFOLD is a powerful voltage controlled wave folder. The input drive and wave fold controls make up the heart of the design, providing warm saturation and additive harmonics to the input signal. The wave shift control offsets the input signal to allow for asymmetrical folding - unveiling the subtleties in the distribution of spectral content. The novel bipolar feedback control takes wave folding to a new level by returning the folded output to the input, thereby skewing the wave shapes for dramatic changes to the upper harmonics. An auxiliary feedback input is provided to allow for insane folded FM sounds when another oscillator drives this input.

F WAVE FOLD CONTROL

Use this control to change the **number of folds** relative to the INPUT DRIVE level. The spectral content of the input signal is increased as this control travels from minimum to maximum in the clockwise direction.

S WAVE SHIFT CONTROL

Use this control to apply an **offset** the input signal effectively **altering the symmetry** of the wave folder. Changes made with this control can have a dramatic effect on the frequency spectra of the processed signal.

FB BIPOLAR FEEDBACK CONTROL

This control affects the **feedback** applied to wave folder. This control is capable of feeding back varying levels and also inverting the processed signal back to the input. Feedback affects the processed waveforms by skewing them to create hard edge, thereby dramatically affecting the higher frequency content of the processed signal. When a signal is applied to the feedback (FDBK) input, that signal will superimpose onto the processed main input signal and can be attenuated using the positive half of this control potentiometer.

Center position (0) turns the FEEDBACK off.

Maximum position (+) results in the full, positive feedback (or FDBK input) signal.

Minimum position (-) results in the full, inverted feedback signal.

D INPUT DRIVE

Use this control to set the input drive of the wave folder. Higher drive settings result in **more folds** and therefore more **harmonic content**. This control will also add a bit of warm distortion when driven hard. Use this control along with the WAVE FOLD control to set the maximum number of folds.

L1 FOLD LEVEL LED

Indicates the fold level position as affected by the WAVE FOLD control and FOLD CV input.

L2 SHIFT STATUS LED

Indicates the shift level position as affected by the WAVE SHIFT control and SHIFT CV input.

L3 FEEDBACK STATUS LED

Indicates the feedback level position as affected by the FEEDBACK control and FDBK CV input.

L4 DRIVE LEVEL LED

Indicates the drive level of the input signal as affected by the INPUT DRIVE control and input signal level.

IN MAIN SIGNAL INPUT

This is the main input to the wave folder.

FCV FOLD CV INPUT

Use this input to **voltage control the number of folds** of the signal. This input works with the WAVE FOLD control. A +/-5V signal will modulate the span of the control when it is set to mid position. Vary the position of the control to apply an offset to the modulation. INPUT DRIVE also affects the maximum number of folds.

FCV SHIFT CV INPUT

Use this input to **voltage control the fold symmetry** of the signal. This input works with the WAVE SHIFT control. A +/-5V signal will modulate the span of the control when it is set to mid position. Vary the position of the WAVE SHIFT control to apply an offset to the modulation.

FB IN FEEDBACK INPUT

This input is for **tapping an additional signal** into the FEEDBACK circuit. When a signal is applied, the positive half (CW) of the feedback control acts as an attenuator for the feedback input signal. The negative half (CCW) continues to process negative feedback. Both audio and LFO rate signals can be utilized for a variety of effects from subtle modulation to extreme and razor sharp FM sounds.

FB CV FEEDBACK CV INPUT

This is the input used to **voltage control the feedback state**. This input works with the FEEDBACK control. A +/-5V signal will modulate the span of the control when it is set to mid position. Vary the position of the control to apply an offset to the modulation.

OUT WAVE FOLDER OUTPUT

Output of the wave folder.

COLOR KEY LEGEND

Blue square	PANEL CONTROL
Green square	LED INDICATOR
Purple square	INPUT
Red square	OUTPUT

