

INTRODUCTION

Often considered to be the opposite of filters within a modular system, wavefolders are designed to fold a signal over itself multiple times. This generates additional harmonics, resulting in rich timbres.

While there is a bewildering array of filter types within the synthesiser world, most wavefolders fall within only a few categories. Diode wavefolders in particular come in just two variants: series and parallel circuit topologies. Choosing a specific folder also means being limited to specific sounds and capabilities.

For the first time, Fold 6 puts forward a 6-stage hybrid series/parallel topology, yielding a greater sonic palette than ever in just 4 HP. Having both main (series) and alternate (parallel) outputs means a single module now gives access to just about all wavefolding tones imaginable.

To take things even further, an integrated symmetrical soft clipper limits the output signals to approximately 10 V_{pp}, keeping the amplitude within typical Eurorack levels and making it easier to create overdriven sounds at high fold ratios. This clipping stage can be driven continuously using the shape parameter, smoothly transforming the folded waveforms into pulse waves for even more harmonic content.

Two signal inputs are included, to mix audio signals or add in a DC voltage for asymmetric folding. The symmetry can also be manually controlled using the dedicated knob. Of course, both fold and shape parameters feature voltage control, to enable continuous timbral modulation.

Moving beyond simple signal processing, Fold 6 also lends itself perfectly for feedback patching, CV folding or frequency multiplication; its modest size belies the sonic capabilities within.

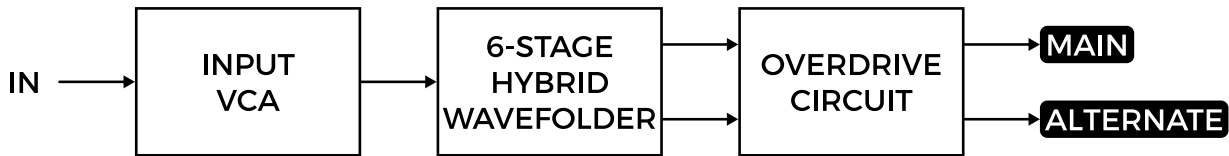
CONTENTS

In the Fold 6 box, you'll find:

- Product card, stating serial number and production batch.
- 16-to-10-pin Eurorack power cable.
- Mounting hardware: two black M3 x 6 mm hex screws, two black nylon washers and a hex key.
- The Fold 6 module itself, in a protective cotton bag.

If any of these items are missing, please contact your dealer or support@joranalogue.com.

SIGNAL FLOW



CONTROLS & CONNECTIONS

1 FOLD KNOB

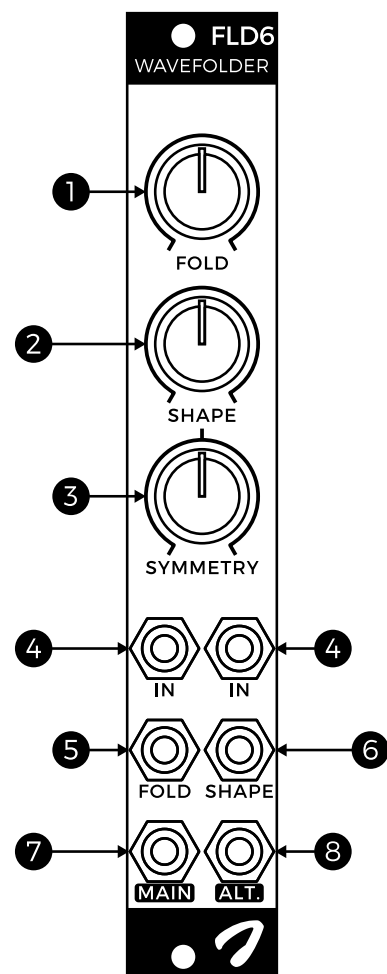
The 6-stage wavefolder is preceded by a linear voltage controlled amplifier (VCA), controlled by the fold parameter. As the signal amplitude going into the wavefolder increases, more fold stages are engaged, resulting in more folds and thus more harmonics being generated. At the minimum setting, the input is fully attenuated.

2 SHAPE KNOB

The wavefolding section feeds into an overdrive circuit. At the minimum setting of the shape parameter, it is essentially disabled and classic wavefolder tones are the result. As the circuit is driven harder, folded continuous waveforms such as sine and triangle waves are gradually shaped into pulses, creating a harsher sound.

3 SYMMETRY KNOB

The symmetry knob adds a manually variable DC offset to the signal inputs, ranging from -5 V to $+5\text{ V}$. This can be used to achieve asymmetric wavefolding, with either the positive or negative part of the waveform being folded more than the other, by turning it away from the centre position. This knob can also be used re-centre the wavefolder if there already is a DC offset present in the input signal(s).



4 SIGNAL INPUTS

Connect the signal(s) to be folded here. These identical inputs are mixed together, which can simplify certain patches as it often removes the need for a separate mixer module. As the entire signal path is DC-coupled, control voltages (CVs) as well as audio signals can be processed. These two signal types can even be combined, for variable symmetry audio wavefolding.

5 FOLD INPUT

The fold CV input provides linear voltage control over the input VCA. The exact number of fold stages being engaged depends on the amplitude of the input signal(s). While the knob range is restricted to +5 V for optimal control, it is possible to drive the wavefolder even harder using external control voltages.

6 SHAPE INPUT

The shape CV input provides voltage control over the overdrive circuit. With the shape knob at the minimum setting, the response is no drive at 0 V, to maximum drive at +5 V. Negative voltages will result in attenuation, allowing the shape CV to be used for output amplitude control as well.

7 MAIN OUTPUT

This output provides the most classic wavefolding action, as found in earlier designs utilising the 'series' circuit topology.

Unlike most wavefolding modules, Fold 6's overdrive circuit constrains the output waveforms to within approximately -5 V and +5 V. This means the waveforms are always kept to around the nominal Eurorack amplitude level of 10 V_{pp}. It also ensures symmetric clipping once the final folding stage has been engaged, creating a purer sound.

Keep in mind that due to Fold 6's high-gain circuitry, some noise and DC offset is to be expected in the output signals, especially at high fold and/or shape levels.

8 ALTERNATE OUTPUT

The alternate output simultaneously provides waveforms such as those from 'parallel' wavefolders, with fold levels and directions varying between the different stages, the result being a more mellow sound for most input signals.

SPECIFICATIONS

MODULE FORMAT

Doepfer A-100 'Eurorack' compatible module
3 U, 4 HP, 35 mm deep (inc. power cable)
Milled 2 mm aluminium front panel with non-erasable graphics

MAXIMUM CURRENT DRAW

+12 V: 40 mA
-12 V: 40 mA

POWER PROTECTION

Reverse polarity (MOSFET)

I/O IMPEDANCE

All inputs: 100 k Ω
All outputs: 0 Ω (compensated)

OUTER DIMENSIONS (H X W X D)

128.5 x 20 x 52 mm

MASS

Module: 60 g
Including packaging and accessories: 135 g

SUPPORT

As all Joranalogue Audio Design products, Fold 6 is designed, manufactured and tested with the highest standards, to provide the performance and reliability music professionals expect.

In case your module isn't functioning as it should, make sure to check your Eurorack power supply and all connections first.

If the problem persists, contact your dealer or send an email to support@joranalogue.com. Please mention your serial number, which can be found on the product card or on the module's rear side.

REVISION HISTORY

Revision D: no functional changes.

Revision C: initial release.

With compliments to the following fine people,
who helped to make Fold 6 a reality!

Ben 'DivKid' Wilson Björn Jauss

Boris Uytterhaegen Gregory Delabelle

Jan D'Hooghe Janus Coorevits

Jérémy Bocquet Jeroen De Pessemier

Lieven Stockx Marcin Staniszewski

Quincas 'Synth DiY Guy' Moreira Sebastiaan Tulkens

Simon Nuytten

Fold 6 User Manual
version 2023-06-26

21st Century Analogue Synthesis—Made in Belgium

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AUDIO DESIGN

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