



1.0.0 User Manual

Overview

The Polymodular System is a set of high-quality synth components that allow you to create modular synths in Reason. The modular approach gives you control over the synth design. You can add as many oscillators as you like, use a mono or stereo signal path, and control the number of voices and voice layering. The components themselves are very flexible with an abundance of features. The Polymodular System can be configured for up to eight voices of polyphony. This manual gives an overview of the components and examples of how they are used.

PolyCV

PolyCV is a new type of CV signal developed by Blamsoft. Traditional gate and note CV signals have a single value and can only control synths monophonically. PolyCV allows gate and note cables to send values on multiple channels. These channels are used in the Polymodular System to control individual voices of the synth. Gate and note jacks in the Polymodular System are smart and can tell whether a signal is PolyCV or traditional CV. When PolyCV is detected the numbered jacks are used. When monophonic CV or MIDI input is detected the Mono jack is used. PolyCV is a digital signal and can be split, but not merged.



(Jacks on the back of Movement Waveform Generator)

Devices



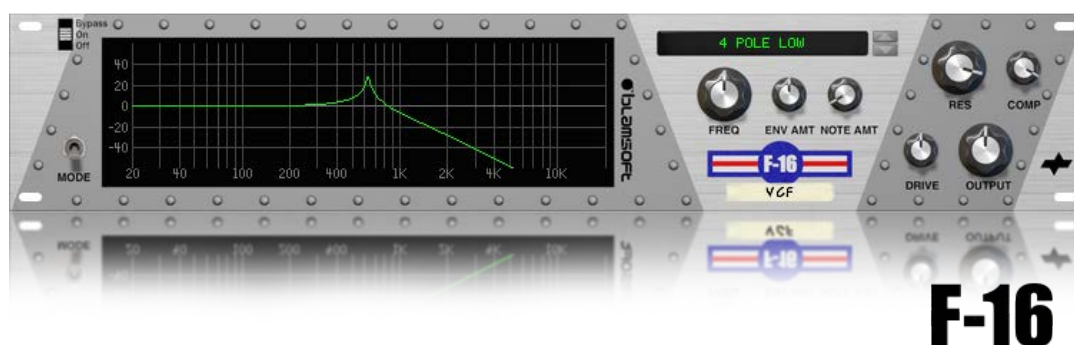
Distributor is the starting point for building a polyphonic modular synth. It provides gate and note control to the other devices. The gate signal controls the start and end of notes as well as the note's velocity. Note is the note MIDI number. The Poly switch (located on the back of the device) is important for using Distributor with the Polymodular System. Poly mode generates PolyCV which is used in polyphonic synths. In Poly mode, any of the gate or note outputs can be used since they are mirrored identically.



VO-1 provides two adjustable analog oscillators and a noise oscillator. It is most commonly used as an audio oscillator, but can also create LFOs when the oscillators are switched to low frequency mode. VO-1 has eight outputs supporting PolyCV and one Mono output.



Movement is an eight-stage adjustable waveform generator. Typically, Movement is used as an envelope to control F-16 and Mark VIII, but it is also an LFO, and high-frequency oscillator. Movement has eight outputs supporting PolyCV and one Mono output.



F-16 is a 16-mode analog-modelled filter with adjustable drive. It is typically used as a voltage controlled filter with Movement providing the cutoff frequency envelope. F-16 has eight stereo channels allowing for stereo or mono voices.



Mark VIII is a voltage-controlled amplifier with parametric eq and analog output meters. Typically, Mark VIII is the last stage of a synthesizer, and its amplitude is controlled by a Movement envelope. The stereo width can be controlled by the Spread knob.



CV Merger provides eight channels of CV merging with four inputs for each merger. It also has two voltage-controlled amplifiers for controlling the level of CV signals.



CV Splitter provides eight channels of CV splitting with four outputs for each splitter. It also has two voltage-controlled amplifiers for controlling the level of CV signals.



Audio Merger provides eight channels of audio merging with four inputs for each merger.



Audio Splitter provides eight channels of audio splitting with four outputs for each splitter.

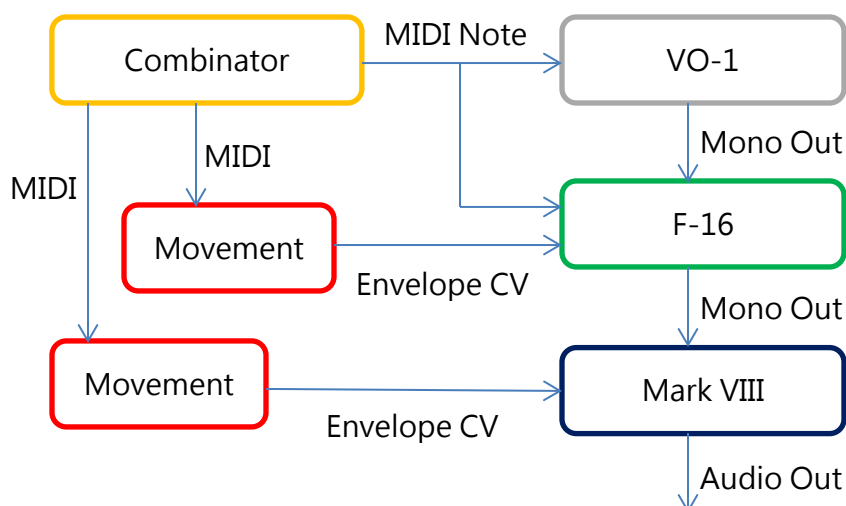


CV Breakout Box converts PolyCV into separate channels of monophonic CV.

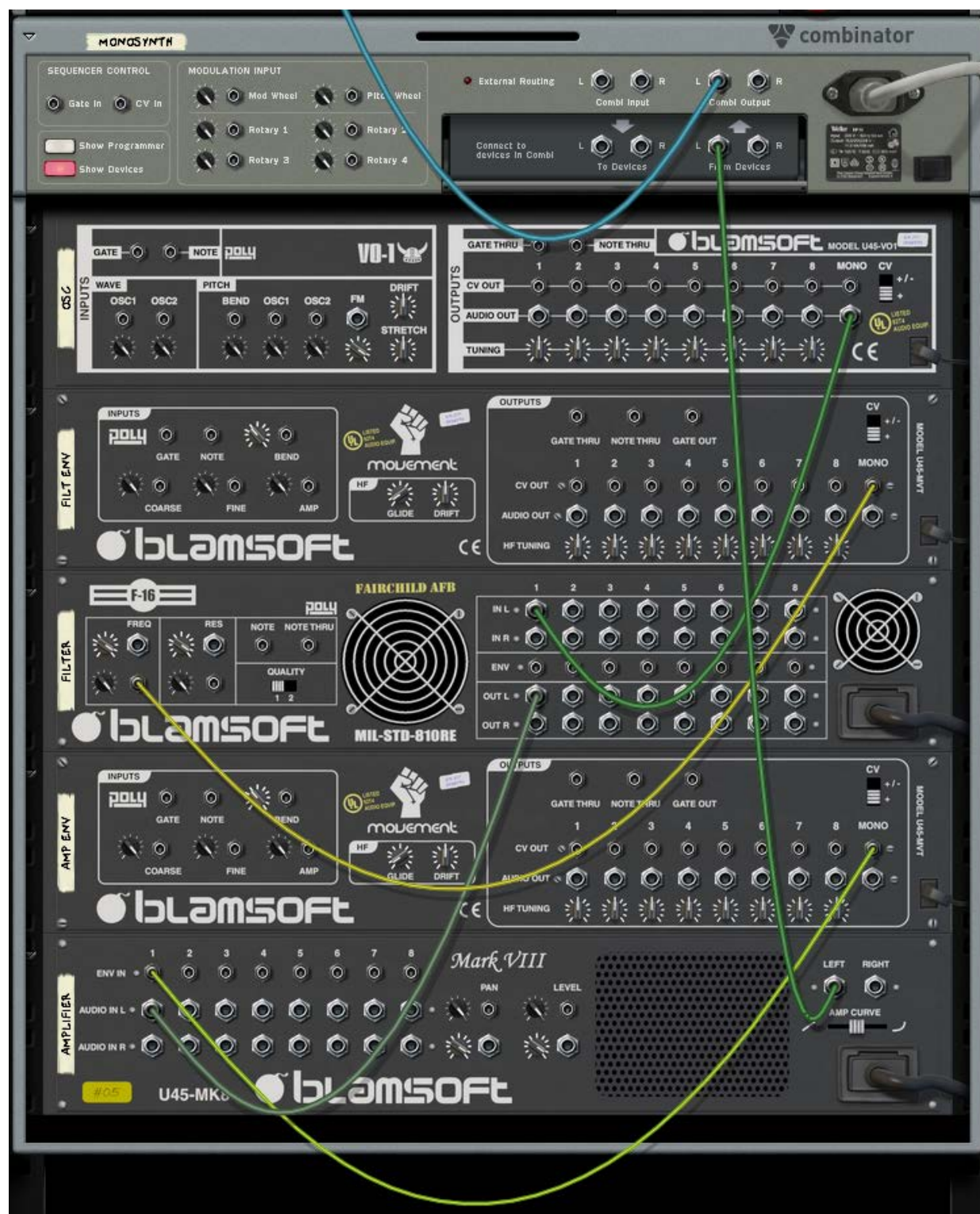
Configurations

Monosynth

The simplest modular synth is a monophonic synth that uses the Combinator MIDI signals to simplify the configuration. The synth consists of an oscillator, filter, amplifier, and two envelopes. In this example, a VO-1 oscillator is used as the oscillator.

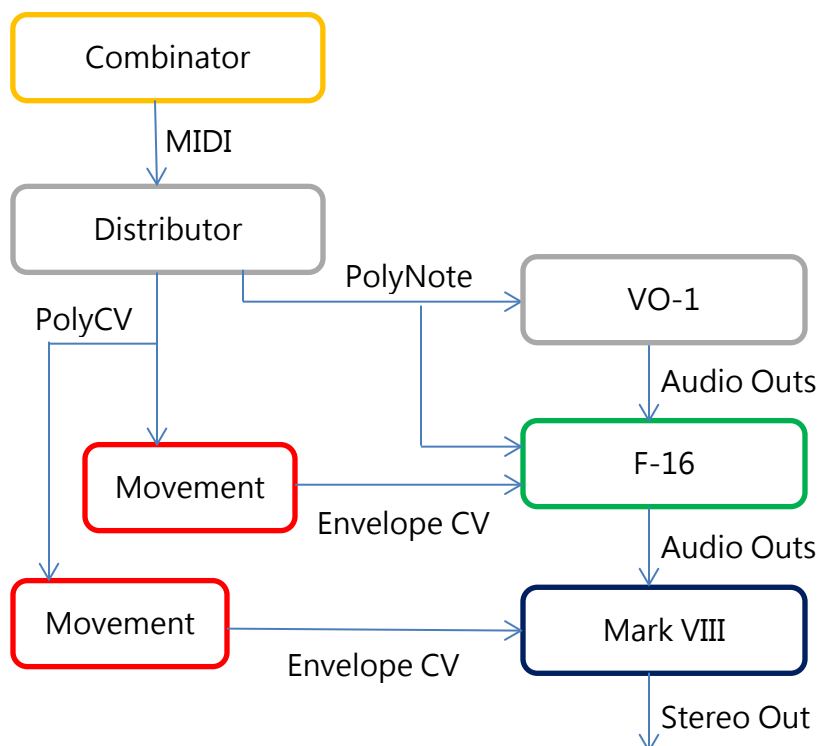


The Combinator note is used by VO-1 and F-16. The Movement envelopes are controlled by the Combinator gate and note. The first envelope controls the filter cutoff frequency. The second controls the amplifier level. The audio signal path goes from VO-1, through F-16, and through Mark VIII.

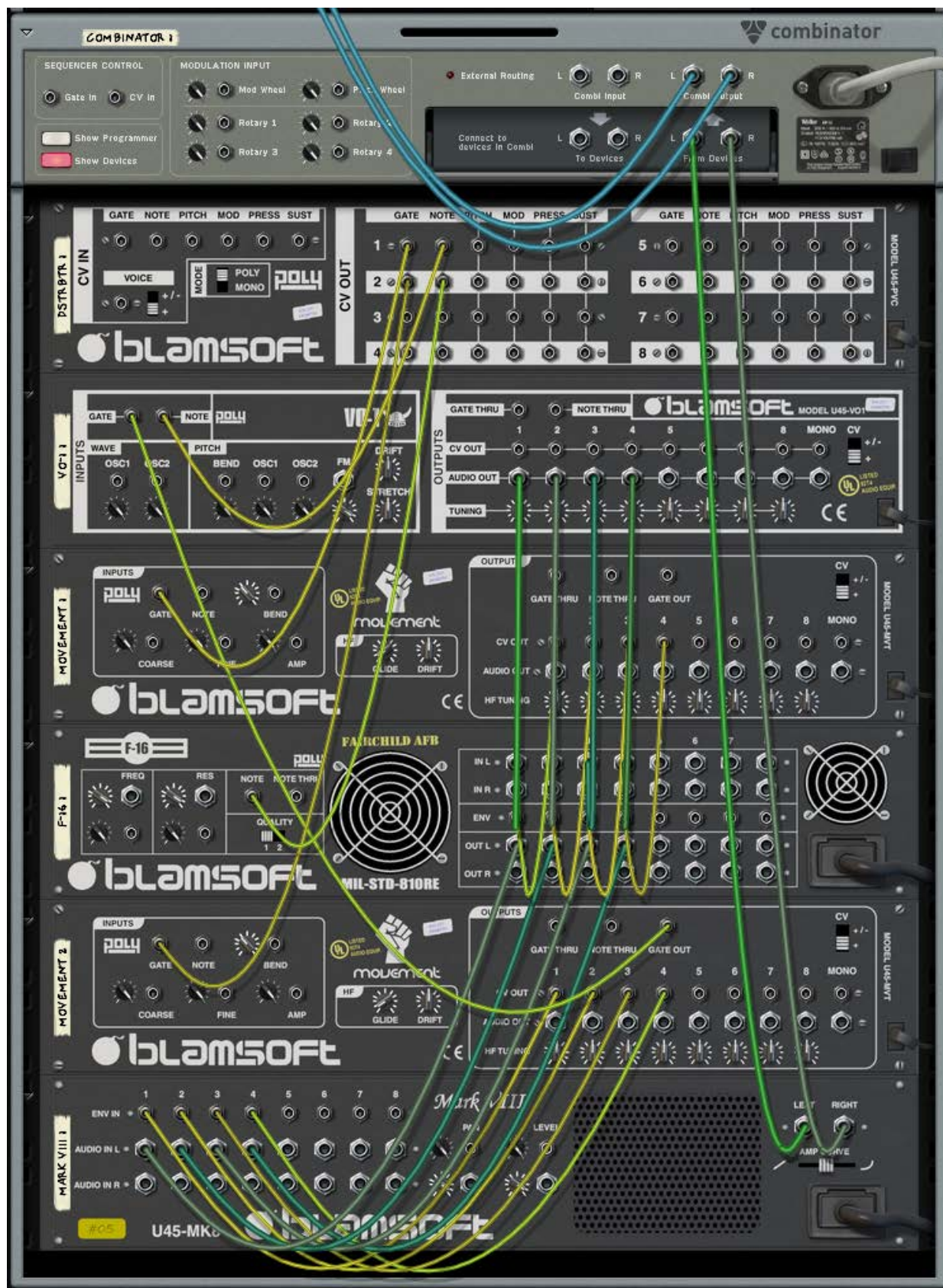


Basic Polysynth

The simplest polyphonic synth is similar to the Monosynth but uses Distributor as a voice controller. Instead of the Combinator MIDI signals, the devices are connected with PolyCV. VO-1 is shown as the oscillator but it could be Movement instead.

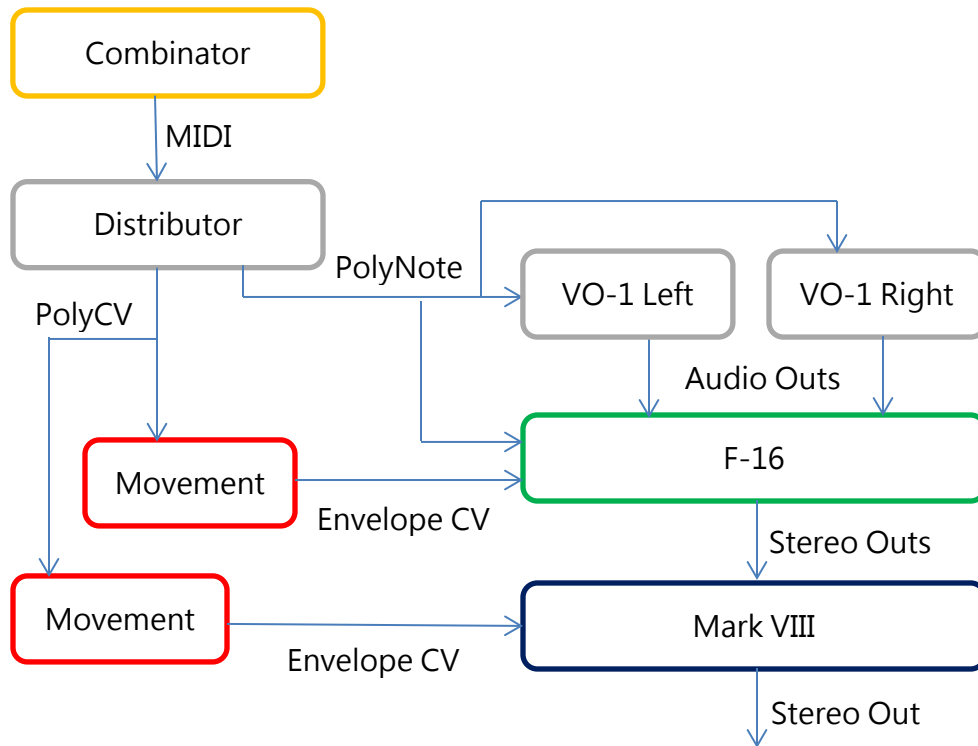


VO-1 only needs the note signal, not gate, from Distributor. It may receive a gate signal from the amp envelope for CPU savings. In the example Combinator, four voices have been connected.



Polysynth with Stereo Oscillators

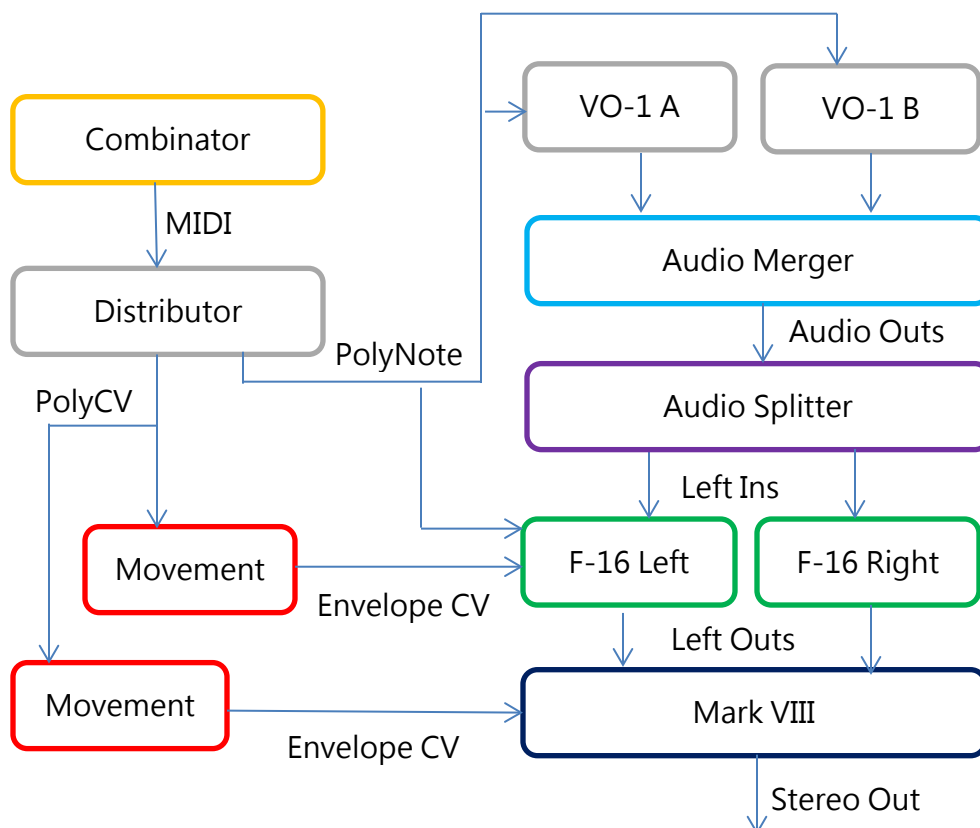
The simple polyphonic synth can be modified to have stereo oscillators. Both F-16 and Mark VIII support stereo signals. A second oscillator is added for the right channel.



To get a stereo effect, the two VO-1 oscillators are adjusted to be slightly different from one another. The Mark VIII spread knob controls the width of the stereo output. The VO-1 oscillators could be replaced by Movement oscillators. For CPU savings, the Movement gate out for the amp envelope can be routed to the two oscillator gate inputs.

Polysynth with Dual Filters

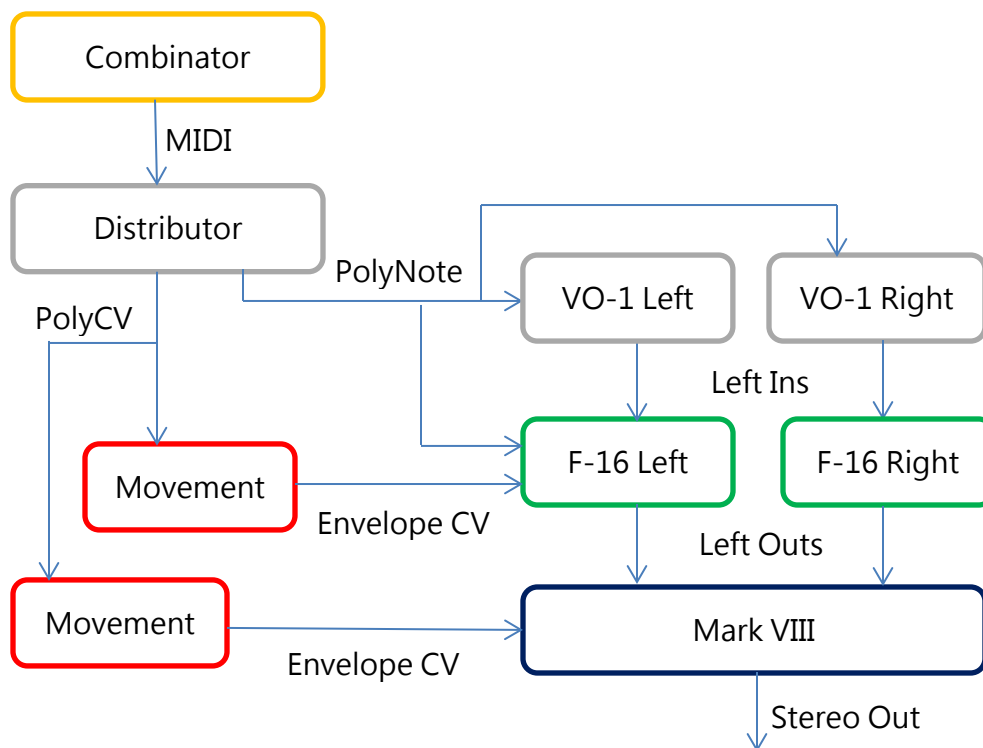
Instead of stereo oscillators, some synths have a dual filter for the stereo effect. In this example, we have two oscillators that are merged and routed through two separate filters.



To get a stereo effect, the two F-16 filters are given slightly different settings. The Mark VIII spread knob controls the width of the stereo output. The VO-1 oscillators could be replaced by Movement oscillators. As usual, the Movement gate out on the amp envelope can be routed to the two oscillator gate inputs for CPU savings.

Polysynth with Complete Stereo Path

This polysynth is a variation on the two previous polysynths. Two oscillators, each with their own filter, can be used to create a stereo effect.



To get a stereo effect, the two VO-1 oscillators and F-16 filters are given slightly different settings. The Mark VIII spread knob controls the width of the stereo output. The VO-1 oscillators could be replaced by Movement oscillators. For CPU savings, the Movement gate out for the amp envelope can be routed to the two oscillator gate inputs.

Taking it Further

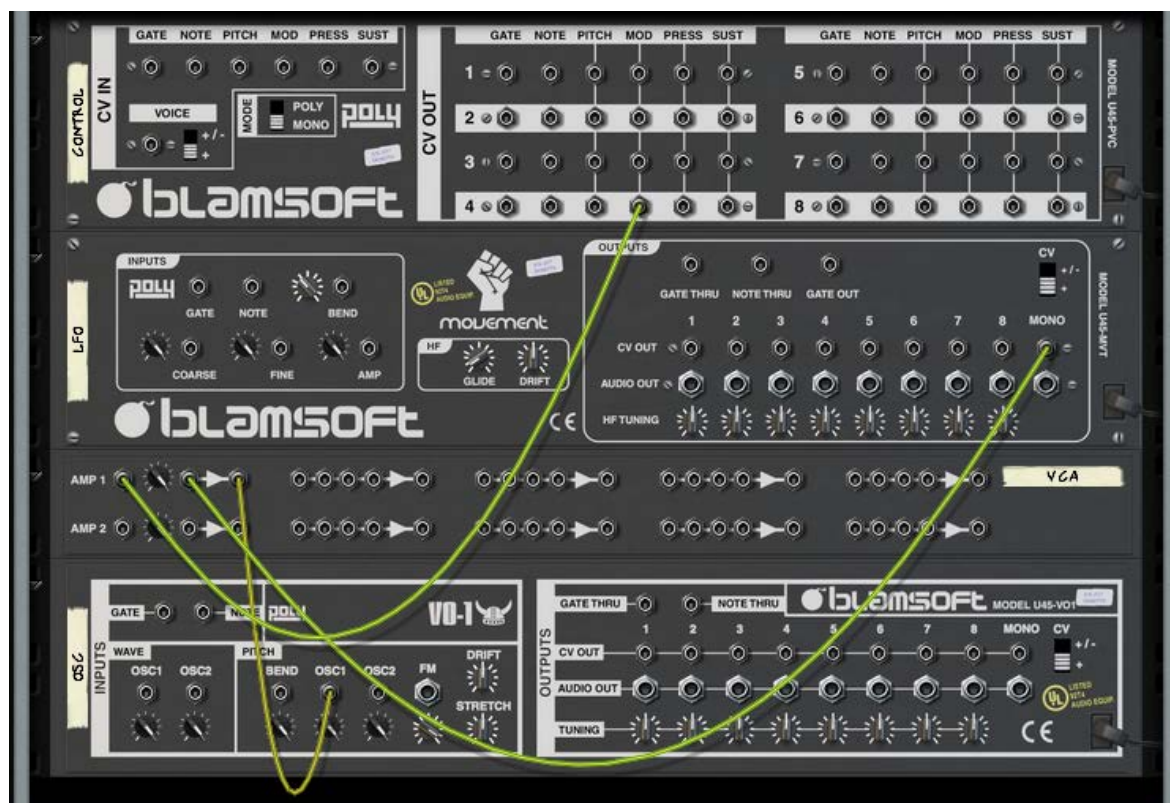
The example configurations only show VO-1 as the oscillator. Movement can always be swapped in as the oscillator. Wherever there was one oscillator, there could be multiple oscillators that are merged with the Audio Merger device.

LFOs

Both Movement and VO-1 can be used as an LFO. There are various places you could route the LFO, for example the frequency input on F-16 or the oscillator pitch inputs on VO-1. See the individual device manuals for details on the CV inputs for each device.

Mod Wheel

For a monosynth, it is best to route the Combinator mod wheel to the desired destination using the Combinator programmer. For a polysynth, there are two typical ways to use the mod wheel. The first is to use Movement as an LFO and route the Mod output from Distributor to the amp CV input on Movement. The second is to use a VCA on CV Merger or CV Splitter. Connect the Mod output from Distributor to the level input on the VCA with the modulation signal going through the amp (as shown below).



CPU Usage

With large patches, CPU usage can start to be a problem. There are a few ways to lower the CPU usage.

- Connect the Gate Out signal from the amp envelope Movement to the Gate input of every oscillator.
- Use Normal for the F-16 quality setting. This algorithm is very good and lighter on CPU.
- Use fewer voices in Distributor. You don't have to disconnect any cables, just turn the voice count down. This is especially useful when the amp envelope has a long release tail.

Credits

- Thanks to Daniel Thiel (eXode) for his initial evaluation of the system and important feature requests.
- Thanks to Frank Willeke for very thorough alpha testing and important feature requests.
- Thanks to Tom Pritchard, Navi Retlav, Nicolas Delmotte (odarmonix), and Daniel Thiel (eXode) for factory patch design.
- Thanks to Brandon Peoples for creating excellent videos.