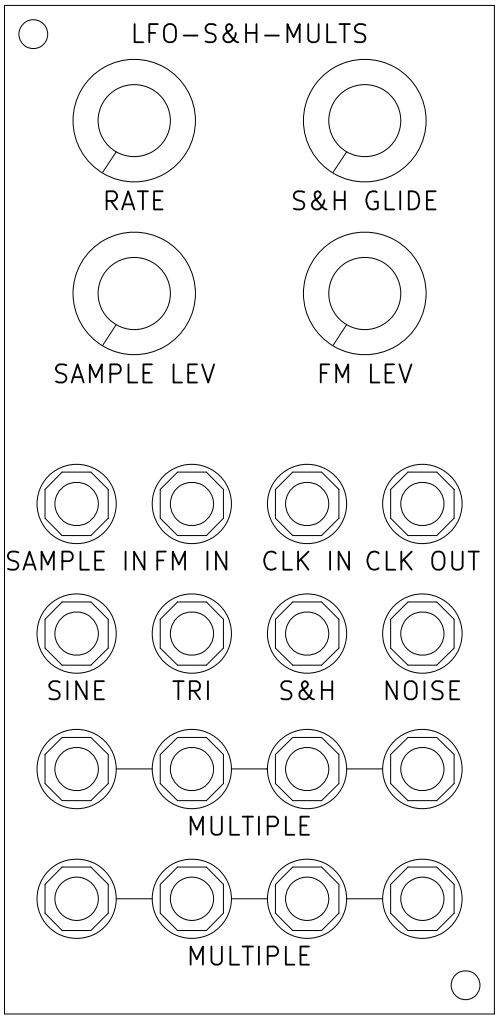
.: Modulation Source User Manual :.

Brief:

Modulation source containing a voltage controlled Low Frequency Oscillator, a White Noise Source, and a Sample And Hold unit. Two rows of four multiple jacks are also provided. All waveforms have a range of +/- 5 volts.

Panel layout:



Description of the controls:

- RATE: rate control for the Low Frequency Oscillator.
- S&H GLIDE: portamento control for the Sample And Hold.
- SAMPLE LEV: attenuator for the SAMPLE IN jack. If this control is turned all the way down the Sample And Hold will have no signal to sample.
- FM LEV: attenuator for the FM IN jack, modulates the LFO frequency.

Description of the jacks:

- SAMPLE IN: attenuated input to the Sample And Hold unit, normalized to the NOISE output.
- FM IN: attenuated Frequency Modulation control voltage input for the LFO.
- CLK IN: clock input for the Sample And Hold, normalized to the LFO clock output.
- CLK OUT: square wave clock output from the LFO.
- SINE: LFO sine wave output.
- TRI: LFO triangle wave output.
- S&H: sample and hold output.
- NOISE: white noise output.
- MULTIPLE (x2): two rows of four multiple jacks.

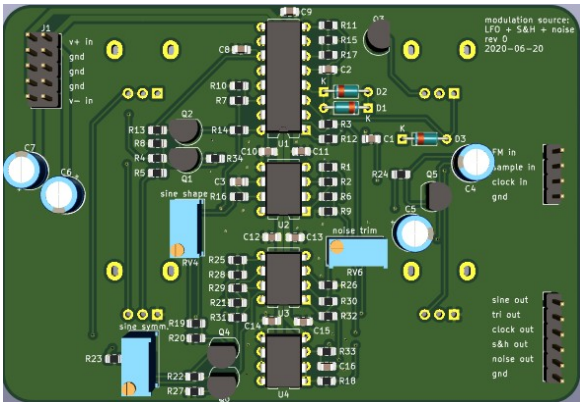
Note about the normalization:

Some signal normalization is provided behind the panel so that commonly used functions can be accessed without extra patching. The white noise signal is normalized to the SAMPLE IN jack, so that the classic random sample-and-hold patch is available by default. If you desire to sample a different signal, simply patch it to the SAMPLE IN jack, and the default noise normalization will be broken.

Likewise, the CLOCK IN jack for the sample-and-hold is normalized to the CLOCK OUT jack of the LFO, so that the sample-and-hold will automatically trigger at the frequency of the LFO. If a different clock source is desired simply patch it to the CLOCK IN jack to break the default normalization.

Calibration:

The level of the white noise source and the sine wave shape can be calibrated with trimpots on the rear of the pcb. An illustration of the rear of the pcb showing the trimmers is given below:



Note the three labeled trimmers: “noise trim”, “sine shape”, and “sine symm.”. Calibration is easiest with the aid of an oscilloscope, but these may be trimmed by ear as well, and exact calibration is not critical.

To calibrate with an oscilloscope:

Adjust the noise trim while monitoring the NOISE output jack until the noise signal is approximately +/- 5 volts peak-to-peak. Note that the noise circuit takes a while to start up when the system is first turned on, so it is best to wait a minute or two after turning on the system before adjusting the noise level.

Adjust the sine shape and sine symm. trimpots while monitoring the SINE output jack until the sine wave closely resembles a nice rounded sine. It is easiest to do this when the LFO is set to a fairly high frequency. The shape trimmer adjusts the “puffiness” of the sine wave, and the symmetry trimmer adjusts the top-to-bottom symmetry of the sine wave.

To calibrate by ear:

Mix the NOISE source with some oscillators or whatever sound source you typically use, and adjust the noise trim while listening to the audio until the balance feels right.

Use the SINE output to modulate the frequency of a VCO and adjust the sine shape and sine symm. trimmers until the modulation sweep sounds good to you

A note about the white noise:

The white noise is generated by the NPN transistor Q5. The noise level is dependent on the particular transistor used. Select this transistor for the best noise level and spectrum. Aim for noise that sounds good to you and is easy to trim to approximately +/- 5 volts peak-to-peak. The designated NPN is a BC550, if substituting other transistor types take care of the pinout.

Current draw:

+12 volts: 20mA

-12 volts: 20mA