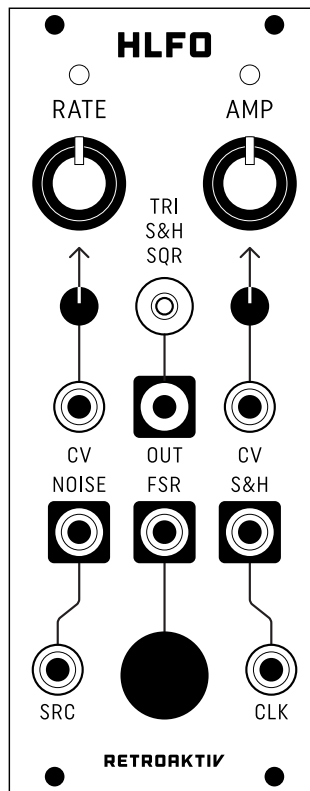


RETROAKTIV

HLFO

UTILITY MODULATION SOURCE



BUILDER'S GUIDE

BILL OF MATERIALS

The latest bill of materials is posted at retroaktivsynthesizers.com under the HLFO product listing. Any part changes will be listed there.

MOUSER PARTS LIST CART LINKS

To order the HLFO components from Mouser, go to the following URL:

<http://www.mouser.com/Tools/projectcartsharing.aspx>

Then enter the code:

92fe1b4210

This cart includes all parts except for the following: Tayda SPDT On-Off-On Toggle, 2 knobs, 2 Song Huei Tall Trimpots, power cable, 3.5mm jacks, foam FSR protector pad. The SPDT switch is part number A-5108 at Tayda Electronics. All of these parts are available at www.RetroaktivSynthesizers.com.

TRIM PROCEDURE

The range of the RATE knob needs to be trimmed using trimpots marked RATE RANGE and MIN RATE.

Set panel controls to the following:

RATE = 0 %

AMP = 100%

RATE CV = 0%

AMP CV = 0%

SWITCH set to TRI

SLOW/FAST JUMPER set to FAST

Connect the OUT jack to an oscilloscope or a VCO. We want to observe the shape of the triangle wave when the RATE knob is set to its lowest setting.

Set RATE RANGE TRIM fully clockwise.

Set MIN RATE TRIM to desired minimum frequency. Note that as this trim approaches 0, (fully counter-clockwise) the triangle becomes more asymmetric. Symmetry should be near perfect for periods of at least 10 seconds. If the trimmer is set to 0, the LFO will stop oscillating when RATE is set to 0%. The factory setting is to set the minimum rate such that the triangle is as slow as possible while remaining symmetrical.

Set RATE knob to 100%. Use RATE RANGE TRIM to set maximum desired rate.

BUILDING TIPS, MODS & NOTES

Populate the electrolytic caps, jacks, headers, pots, FSR, LEDs, and trimmers last.

C3 controls the range of the SLOW jumper setting. 1 μ F is recommended.

C26 controls the range of the FAST jumper setting. Use a 1 μ F here. For faster speeds, use a .082 μ F. It's recommended that the default values (1 μ F and 1 μ F) for the FAST and SLOW settings be used.

The circuit board has a sine wave shaping circuit on it. It is not normally used. R36, 49, 53, and D13 form a TRI to SINE converter. Do not populate these parts. They are also outlined in black on the PCB to indicate that these are not to be populated. To use the sine shaper, populate these parts and remove R25. This will disable the triangle output and replace it with a 1vpp sine wave.

To increase noise amplitude, decrease R41.

To increase max amplitude of SQU output, decrease R24 by 1k to 5k.

Do not solder pots, jacks, or switches until they are placed in their PCB footprints and fitted through the panel. It is a good idea to secure the jacks to the panel before you solder, taking care that they are straight, and that all output jacks are centered in their black square. Be sure that the tall pots and switch are straight before soldering.

If using an FSR with a sensor area larger than the slot on the front panel, be sure that you thread the tail through the panel before soldering to FSR to the board.

the two cyan LEDs should be flush with the front panel. To do this, use a piece of scotch tape and place it over the LED holes on the panel. Poke the LEDs into their holes from beneath the panel, and when they are held in place securely, solder to the PCB. This should be done only after all pots, jacks, and switches are fastened to the panel and soldered in place.

0603 or 0805 resistors can be used.

TL072, TL082, TL074, or TL084 can be used for this project. TL072 can be used to replace the 1458 IC.

Q2 can be selected for the best sounding noise.

D6 (AMP LED) can be a bi-color, 2-lead, cylindrical, 3mm LED. If using a bi-color LED, omit D2.

Make note of the V+ and V- markings on the PCB before you plug your power cable in. Be sure that your power cable lines up with the polarity indicated on the HLFO.

Updated from rev 1.0:

Bridge R20 with 0 ohms

R18 = 4.7k

R10 = 47k