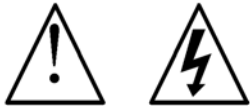




FryBaby

Audio Burn-in Generator





Warnings

This product does not use any dangerous voltages. Power is supplied from either a 9V battery or a UL listed 9V wall-wart. Hagerman Technology assumes no liability.

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Disclaimer

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1 Before You Begin

Description

Congratulations! You have just purchased one of the highest performance-per-dollar audiophile products available. The FryBaby audio system conditioner is a burn-in signal generator designed especially for cables and interconnects. It can also be used to burn-in linestages, phonostages, and amplifiers. The sophisticated electronic waveform – a combination of wideband noise and variable frequency amplitude modulation – is designed to provide maximum effectiveness without resorting to high power levels. FryBaby is part of the FryKleaner™ series of professional cable burn-in generators.

The FryBaby half-kit consists of a blank circuit board, LED dome lens, lens ring, four screws, some wire, and these instructions. To complete, you must purchase the remaining parts yourself from Mouser Electronics (www.mouser.com).

Features

- Unique signal waveform
- Three output levels
- iRIAA equalized for MC and MM phonostages.
- Includes power supply
- Breaks in both cables and electronics

Tools

You will need a few basic shop tools (screwdriver, pliers, wire cutters, etc.) and a fine-tip soldering iron to build this kit.

2 Parts to Buy

Parts List

The following parts should be purchased from www.mouser.com.

| Component | Qty | Mouser | Reference Designators |
|---------------|-----|-----------------|--|
| 1N4148 | 4 | 512-1N4148 | D2, D3, D5, D6 |
| LED | 1 | 604-WP59EGW | D4 |
| 2N3904 | 2 | 512-2N3904TF | Q1, Q2 |
| ICL7662 | 1 | 513-NJU7662D | U3 |
| LM358 | 2 | 513-NJM2904D | U1, U2 |
| LM13700 | 1 | 513-NJM#13700D | U4 |
| LF347 | 1 | 595-LF347N | U5 |
| 47uF 25V | 10 | 140-XRL25V47 | C4, C8, C9, C10, C21, C11, C13, C20, C3, C5 |
| 100nF | 5 | 80-C410C104M5U | C15, C16, C17, C1, C7 |
| 3.3nF | 1 | 80-C430C332J1G | C19 |
| 1nF | 1 | 80-C410C102J1G | C18 |
| 100pF | 1 | 80-C410C101J1G | C22 |
| Switch Rotary | 1 | 105-SR1712-24NS | S1 |
| Case | 1 | 635-H-659VTR-GR | |
| Knob | 1 | 45KN015 | |
| RCA Jack | 2 | 161-0252-EX | J1, J2 |
| 3.5mm DC Jack | 1 | 16PJ011 | J3 |
| Wall Wart | 1 | 412-109011 | |
| RCA-to-RCA | 1 | 171-ADRJRJ | |
| 100 ohm | 10* | 299-100-RC | R31, R43, R4, R19 |
| 1k | 2 | 299-1K-RC | R42, R37 |
| 2.2k | 1 | 299-2.2K-RC | R38 |
| 4.7k | 2 | 299-4.7K-RC | R39, R34 |
| 10k | 10* | 299-10K-RC | R44, R26, R30, R29, R35, R36, R7, R22 |
| 47k | 10* | 299-47K-RC | R6, R9, R12, R20, R8, R23, R28, R45 |
| 100k | 10* | 299-100K-RC | R1, R10, R14, R11, R21, R25, R27, R32, R40 |
| 1M | 1 | 299-1M-RC | R41 |

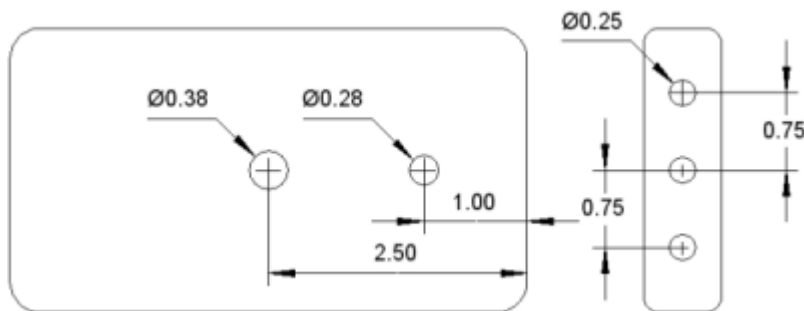
* Minimum quantity.

3 Assembly & Test

Casework

The case needs to be prepared for assembly.

- ❑ On the top cover, mark a spot along the centerline 2.5 inches back from the outer edge (open side). Drill a 3/8" hole.
- ❑ Mark another spot 1 inch back from outer edge. Drill a 9/32" hole.



Drill these holes in case.

- ❑ On the front plate, mark the center. Drill a 1/4" hole.
- ❑ Mark two more spots 3/4" from middle point, along centerline. Drill a 1/4" hole at each spot.



Chassis pieces after drilling.

- ❑ Mount the 3.5mm dc power jack into the center hole on front plate. Textured side faces outward.
- ❑ Mount the two RCA jack to the other holes. Orient as shown and tighten.



Front plate assembly.

- ❑ Insert the battery terminal clips into the bottom half of case.
- ❑ Insert the plastic LED dome lens into the top half of case. Secure in place with the black plastic ring.

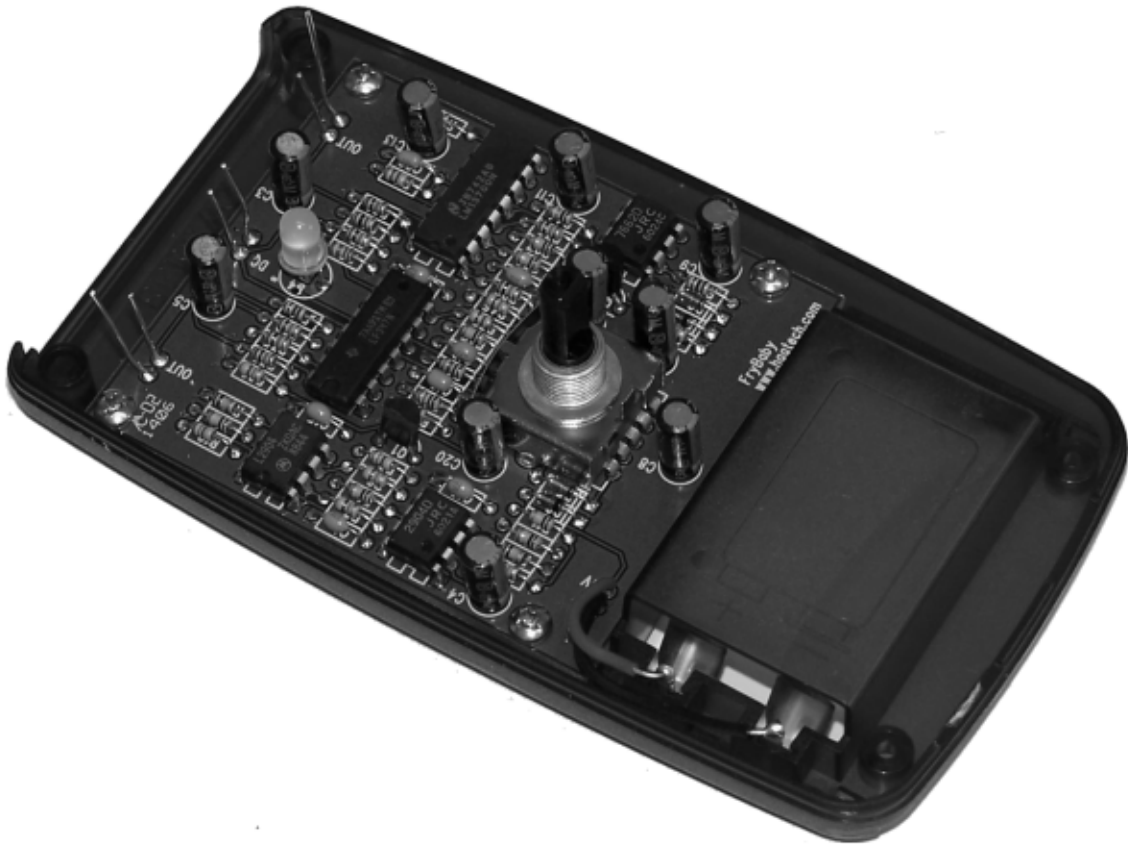
Circuit Board

Assemble the circuit board in the following order. Use the stuffing guide in the back of this manual. Solder and clip leads before continuing.

- ❑ Install all resistors, diodes, and axial leaded capacitors.
- ❑ Install integrated circuits.
- ❑ Install transistors.
- ❑ Install LED. Short lead towards rotary switch.
- ❑ Install electrolytic capacitors.
- ❑ Install rotary select switch. Make sure it is inserted fully and is flush with board.

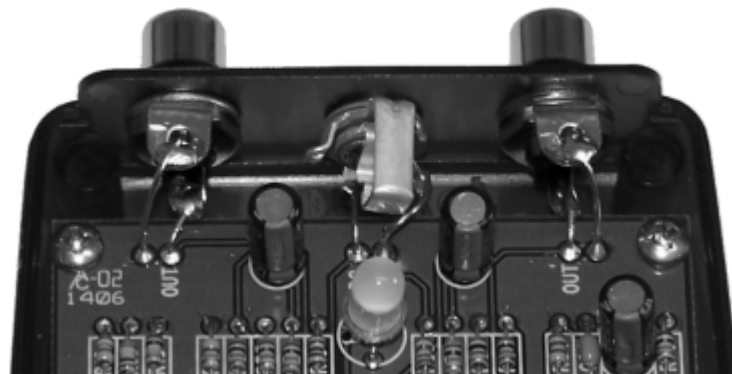
Integration

- ❑ Mount circuit board into bottom plastic using the four supplied #4 screws.
- ❑ Solder short lengths (about $\frac{3}{4}$ ") of bus wire into the holes at the front edge of the circuit board. They are labeled OUT and DC.
- ❑ Solder short wires into the 9V and unlabeled ground hole (next to it) at the bottom of the board.
- ❑ Solder the 9V wire to the "+" battery terminal on the case (nearest).
- ❑ Solder the ground wire to the "-" battery terminal.



Case with board installed.

- ❑ Insert a battery for testing. Turn the switch to the right. The LED should start blinking red. Remove battery.
- ❑ Mount the front plate assembly into the bottom case plastic.
- ❑ Solder the short bus wires to their respective terminals on the jacks, as shown. The ground tabs on the RCA jacks will need to be bent over.



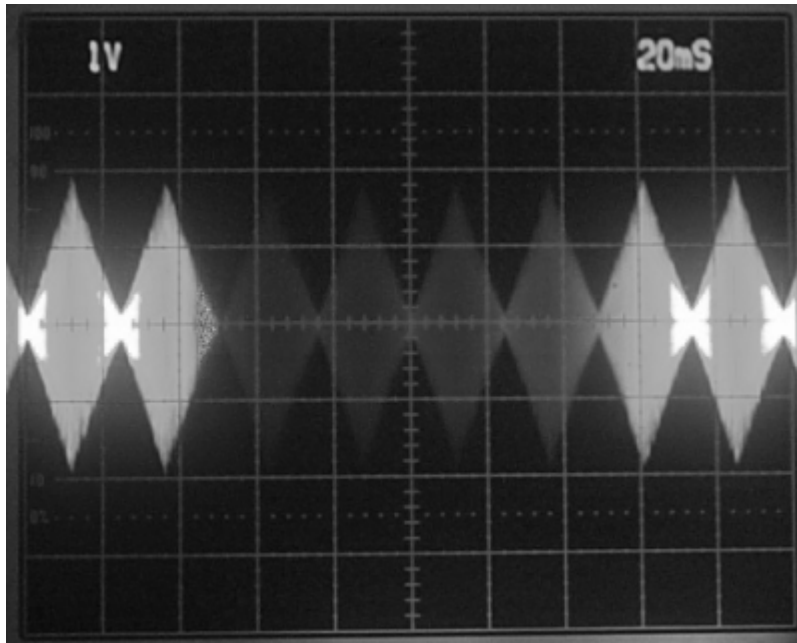
Front plate wiring.

- ❑ Mount top cover and secure in place with four screws.

- Add battery cover.

Testing

Once plugged in and turned on, the LED should start flashing. The best way to test is to connect one of the outputs to an oscilloscope and observe the waveform. It should be a sweeping modulated noise source as in the photo below, a distinctive bowtie shape. Of course, not everyone has an oscilloscope. You can also check operation by setting output level to LINE and connecting to one of the line level inputs to your audio system. You should hear what sounds like a pulsing inter-station FM noise.



Oscilloscope photo of FryKleaner signal.

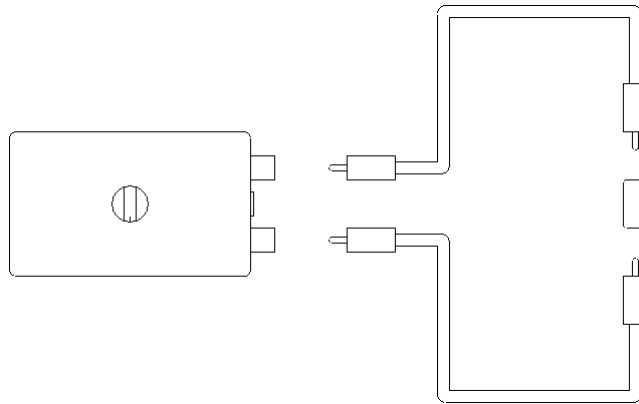
4 Operation

The FryBaby's control knob sets the manner of operation. MC selects an output level suitable for driving moving coil phono stage inputs (-60dB), MM for moving magnet phono stages (-40dB), and LINE for everything else. The FryBaby runs off of the internal battery whenever the wall-wart supply is not used, with the LED blinking at the rate of modulation. There are two modes of cable burn-in, voltage and current. Both are required for maximum effectiveness.

In voltage mode the cable dielectric is excited by electric fields. Leave the far end of the cable open-circuited (see diagrams in following section). In current mode, the cable is short circuited, and conductors are exercised via magnetic fields. Short-circuit the far end of the cable or form a loop by returning the cable to the other FryBaby output. Current mode is not applicable when using the FryBaby to burn in amplification.

It is best to do a voltage burn for 24 hours followed by a current burn for 48 hours. Thus, a typical stereo interconnect pair will require on average two batteries. Note: silver conductors typically take twice as long! Battery operation is inherently self-timed, in that when the battery dies, the FryBaby output stops.

The FryBaby can burn in a stereo pair of interconnects by using the female-to-female adapter at the far end. First, do a voltage burn by connecting the interconnect pair directly to the FryBaby outputs. Set to LINE. After the voltage burn, do a current burn by inserting the adapter to close the loop.



Amplification electronics are burned in using voltage mode. Connect the FryBaby outputs to the inputs on your phono stage (you'll need an interconnect). Set the output amplitude to either MC or MM, depending on the gain of your phono stage. This sets the burn-in signal to the correct amplitude and equalization. For line stages or other types of amplifiers, use the LINE level output. Amplifier must be powered on.

5 Specifications

The following specifications are subject to change without notice.

| Item | Specification |
|------------------|---|
| Output Voltage | 1Vrms (LINE), 10mVrms (MM), 1mVrma (MC) |
| Current Limite | 10mA |
| Signal Bandwidth | 10Hz to 100kHz |
| Battery Life | 33 hourse (alkaline) |
| AC Voltage | 120Vac 60Hz |

6 Warranty & Service

Warranty

Hagerman Technology LLC warrants this product free of defects in materials and workmanship for 10 years. If you discover a defect, Hagerman Technology LLC will, at its option, repair or replace the product at no charge to you provided you return it during the warranty period, transportation charges prepaid to Hagerman Technology LLC. This warranty does not apply if the product has been damaged by negligence, accident, abuse or misuse or misapplication, has been damaged because it has been improperly connected to other equipment or has been modified without the express written permission of Hagerman Technology LLC. This warranty is limited to the replacement or repair of this product and not to damage to equipment of other manufacturers.

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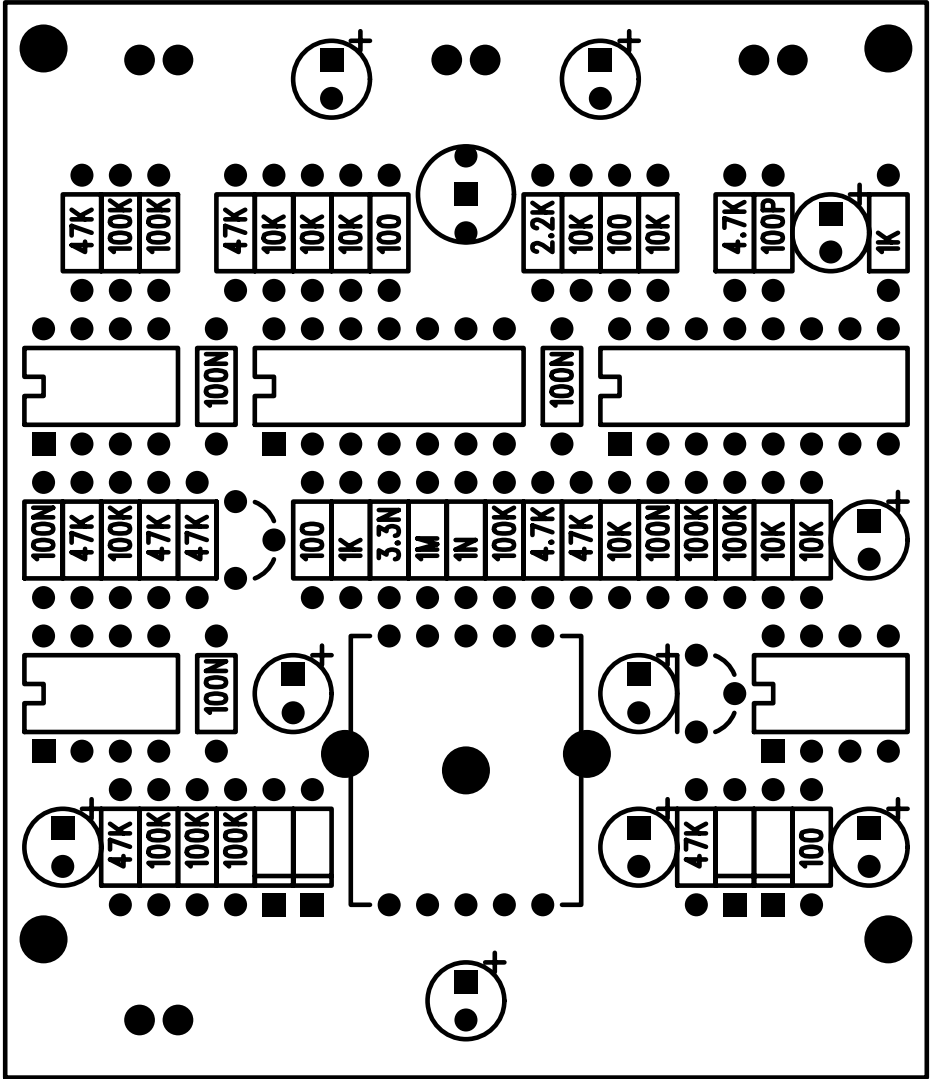
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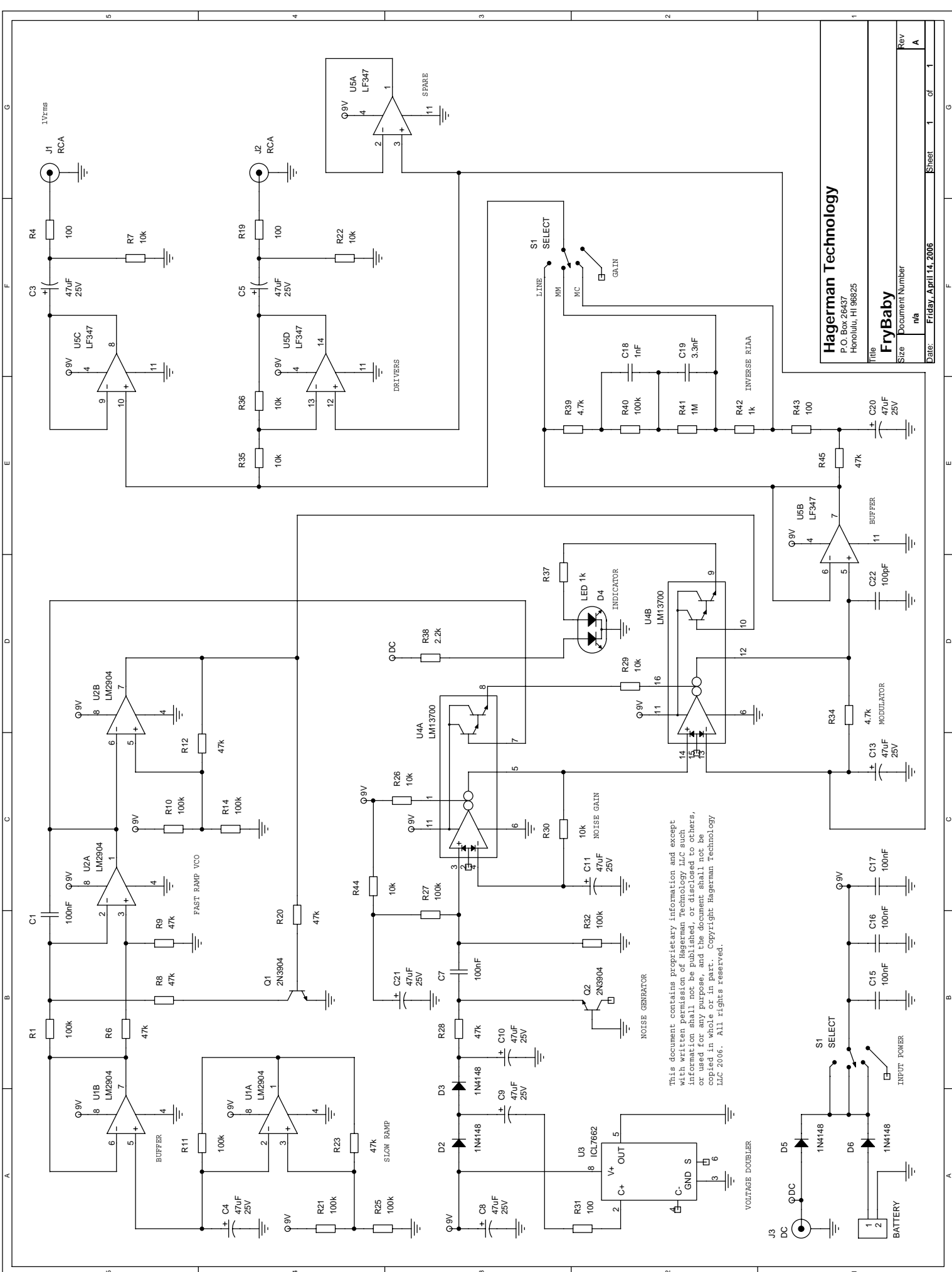
Service

Refer to Chapter 4 for troubleshooting information. If the problem persists, contact Hagerman Technology for service at **jim@hagtecch.com**.

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