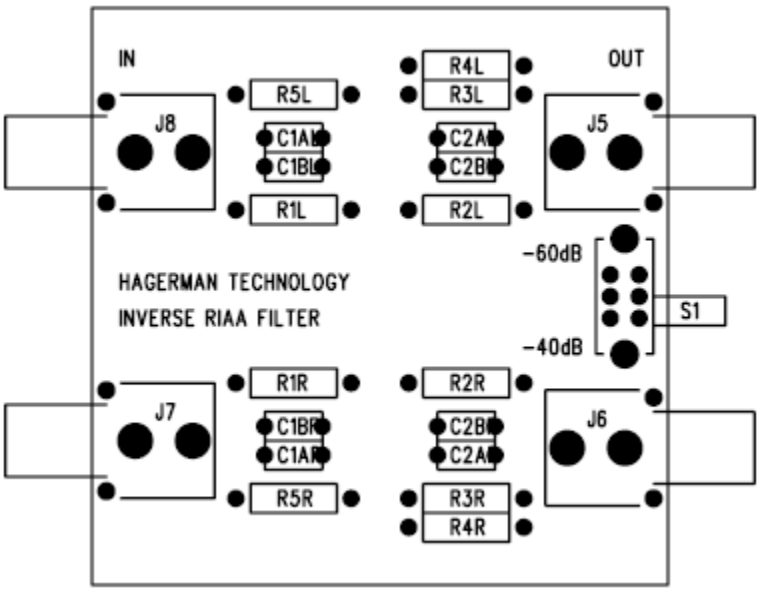
HAGERMAN
TECHNOLOGY

IRIAA Filter



Warnings

This product does not use any dangerous voltages.

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Disclaimer

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1 Before You Begin

Description

The inverse RIAA Filter is an accurate reference for testing modern phonostages. It provides the inverse transfer function of the RIAA response and level shifting so that a line level signal is converted into exactly what a phonostage input expects. Separate output levels of –40dB and –60dB (referenced to 1kHz) accommodate moving magnet and moving coil stages, respectively.

The iRIAA Filter "half-kit" (for DIY) comprises a blank circuit board and these instructions. To complete the project, you must purchase additional parts from DigiKey (www.digikey.com).

You can optionally build this kit into a chassis of your own design.

Features

- Reference accurate to within +/-0.5dB
- Two output levels (-40dB, -60dB)
- Two separate channels

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.digikey.com**.

Component	Qty	DigiKey	Reference Designators
1.8nF cap	2	478-3431	C1
3.3nF cap	4	478-3423	C2
60.4 1%	5	60.4XBK	R4
536 1%	5	536XBK	R3
1.91k 1%	5	1.91KXBK	R5
42.2k 1%	5	42.2KXBK	R1
511k 1%	5	511KXBK	R2
RCA jack	4	CP-1423	
Switch	1	EG1942	

3 Assembly

Step by Step

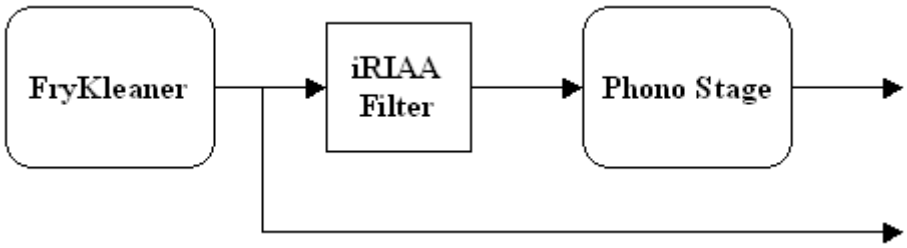
Please follow this systematic procedure for assembling the circuit board. Make sure you have purchased all necessary components before you begin.

- Bend and form the leads on the resistors and install into their proper places. Solder in place and cut leads.
- Install the capacitors and solder in place. Cut leads.
- Install and solder the connectors.
- Install and solder switch.

4 Connections

Break-In

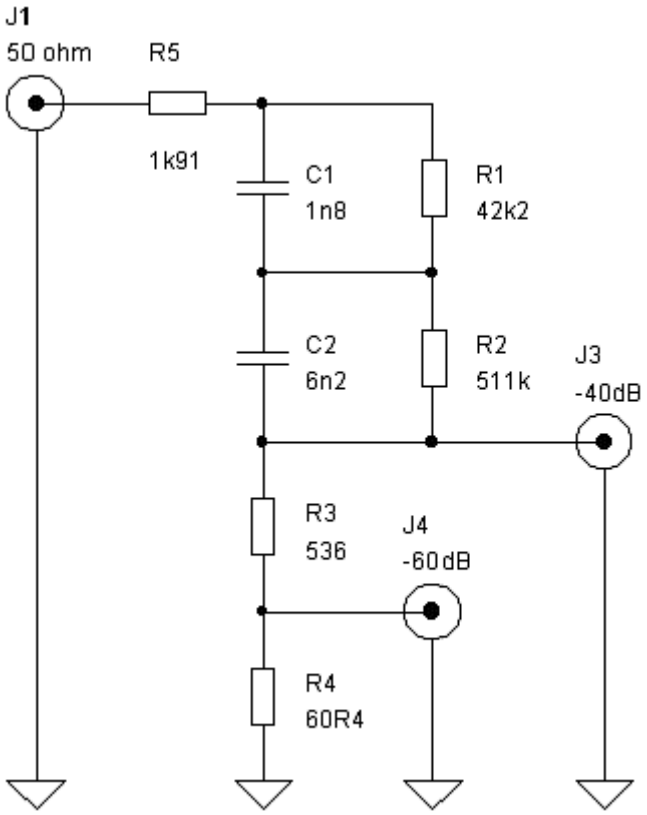
For break-in of phonostages, connect a line level signal source (CD player or FryKleaner) directly to the inputs. The –40dB outputs will mimic a stereo moving magnet cartridge and the –60dB outputs a moving coil cartridge. The output of the phonostage under test (PUT) should be a line level signal virtually identical to the original. If not, then there is a phase or frequency response aberration in the PUT.



5 Specifications

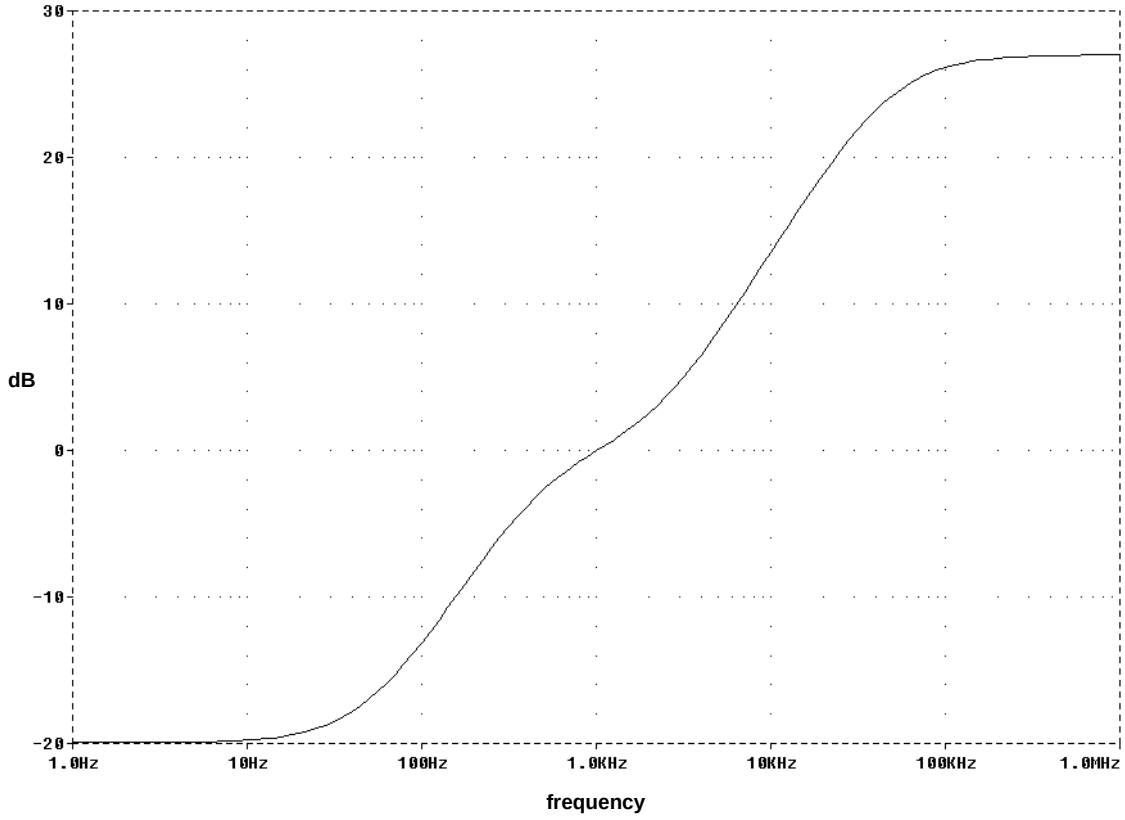
Schematic

This filter has two identical channels. Note, C2 is a combination of two 3.3nF capacitors.



Frequency Response

Each channel matches the ideal inverse RIAA transfer function (with corner added at 3.18us) to within +/-0.5dB. The following table gives exact theoretical values.



Frequency	dB	Frequency	dB	Frequency	dB
10.00	-19.74	223.9	-7.43	5012	8.18
11.22	-19.70	251.2	-6.64	5623	9.04
12.59	-19.64	281.8	-5.88	6310	9.92
14.13	-19.58	316.2	-5.15	7079	10.81
15.85	-19.50	354.8	-4.46	7943	11.72
17.78	-19.40	398.1	-3.81	8913	12.64
19.95	-19.27	446.7	-3.20	10000	13.56
22.39	-19.12	501.2	-2.63	11220	14.48
25.12	-18.94	562.3	-2.11	12590	15.40
28.18	-18.72	631.0	-1.63	14130	16.31
31.62	-18.46	707.9	-1.19	15850	17.23
35.48	-18.16	794.3	-0.77	17780	18.10
39.81	-17.80	891.3	-0.38	19950	18.96
44.67	-17.40	1000	0.00	22390	19.80
50.12	-16.93	1122	0.38	25120	20.61
56.23	-16.41	1259	0.77	28180	21.38
63.10	-15.84	1413	1.17	31620	22.11
70.79	-15.22	1585	1.60	35480	22.80
79.43	-14.55	1778	2.07	39810	23.44
89.13	-13.83	1995	2.57	44670	24.02
100.0	-13.09	2239	3.12	50120	24.54
112.2	-12.31	2512	3.72	56230	25.01
125.9	-11.51	2818	4.36	63100	25.43
141.3	-10.70	3162	5.05	70790	25.78
158.5	-9.88	3548	5.78	79430	26.09
177.8	-9.05	3981	6.55	89130	26.35
199.5	-8.23	4467	7.35	100000	26.57

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.

Any applicable implied warranties, including warranty of merchantability, are limited in duration to a period of the express warranty as provided herein beginning with the original date of purchase and no warranties, whether express or implied shall apply to the product thereafter.

Under no circumstances shall Hagerman Technology LLC be liable for any loss, direct, indirect, incidental, special, or consequential damage arising out of or in connection with the use of this product.

Service

Refer to Chapter 4 for troubleshooting information. If the problem persists, contact Hagerman Technology for service at **http://www.hagtech.com**.

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