



User's Manual

V2 Equalizer

Thank you for your purchase of an Iron Age V2 Equalizer. Iron Age Audioworks is a small team of engineers and designers and we truly appreciate your business. We hope you enjoy using this as much as we enjoyed making it.

## **Safety**

Safety with audio equipment is normally a matter of common sense, but we want to make sure you get the best use out of your equipment. So please, use common sense including...

- Use typical practices for using electrical and audio equipment.
- Don't clean this with water or use it around water.
- Any ventilation openings in the case need to remain open.
- Don't use this around anything that's hot (such as a radiator or space heater).
- Don't defeat the ground pin on the plug or use a ground-lift device that does.
- Don't use a cut or damaged power cord, and keep the cord from getting pinched or stepped on.
- Don't service the box unless you're a qualified technician.

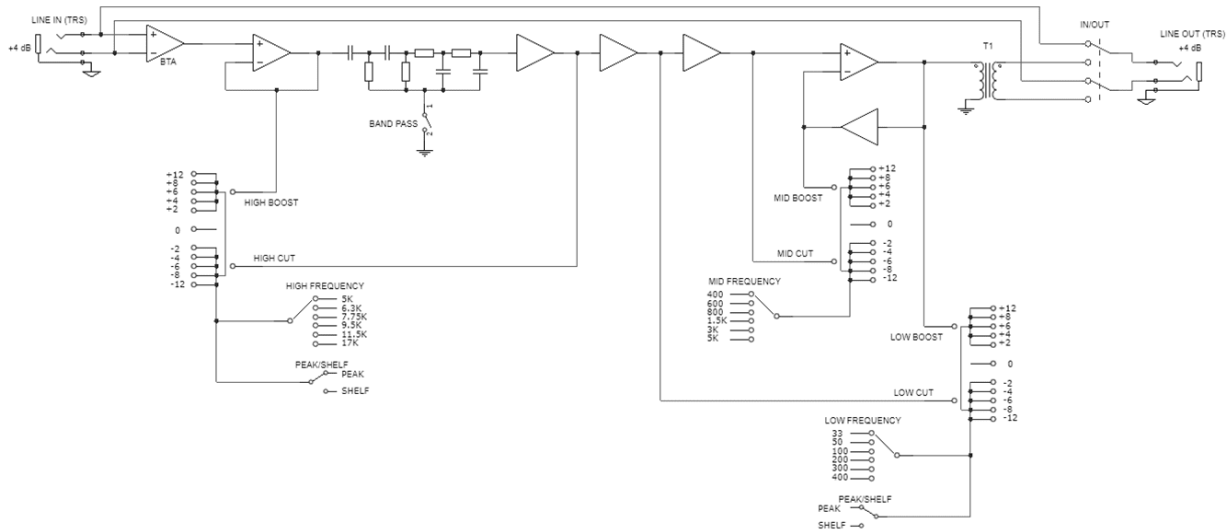
## **Power**

The unit is powered by an internal linear power supply and will accept standard 110 VAC power. A user-accessible fuse is located on the IEC connector at the rear of the case. It will come set at +/-22V. Please contact us if you would like to change the supply voltage for use with other op amps.

## Overview

The Iron Age V2 is a go-to tracking, mixing, or mastering equalizer featuring two channels of versatile, musical EQ in a one rack unit space. It features a proportional Q, bridged-T circuit topology with fully symmetrical active boost and passive cut, true bypass, and an all-discrete signal path. The output amplifier drives a custom wound Cinemag transformer.

## Block Diagram



Each equalizer channel is a three-band, selectable frequency design using two hand-built discrete op amps for gain. There are 18 center frequencies divided into three bands (Low, Mid, and High) as shown below:

Low	Mid	High
33 Hz	400 Hz	5k Hz
50	600	6k
110	750	7.5k
200	1.6k	9.1k
300	3k	11k
400	5k	16k

Each band features up to 12 dB of reciprocal boost or cut in stepped increments of 2, 4, 6, 8 and 12 dB using a bridged-T filter design. The same filter bank is switched between the feedback loop of the amplifier in boost and a passive circuit in cut, which ensures that the boost and cut points are completely identical.

Passive circuits are separated by discrete transistor buffers, which contribute a unique character to the tone of the unit.

The bridged-T circuit implementation also features a proportional Q: as the amount of boost or cut is increased, the bandwidth of the filter is adjusted by a switched resistor to become more narrow. This allows for a wide range of use from broad-brush shaping to careful tone carving, but ensures that the filtering is never harsh and always musical.

The Low and High bands can be switched between peaking and shelving behavior. In shelving mode, the frequency response hits the indicated boost or cut level at the selected frequency and stays elevated or reduced through the extent of the audible range. This allows for musical shaping of the high and low extremes of the audio spectrum.

Additionally, the EQ features a switchable band-pass filter with -3 dB points at 60 and 16k Hz.

The module has a balanced transformerless input stage using a third discrete operational amplifier.

As with all Iron Age products, the V2 uses the M2 discrete operational amplifier, designed and built in-house by us.

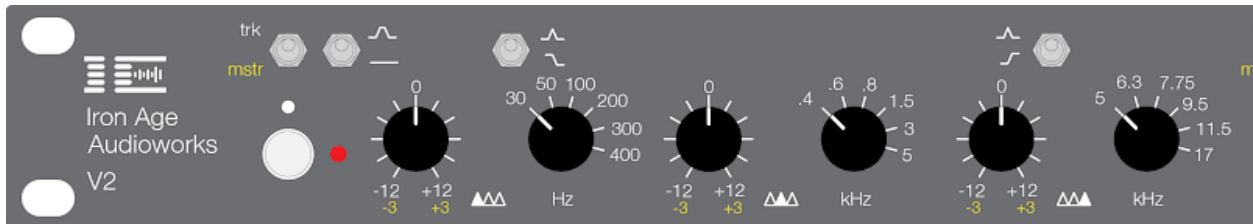
Through the IAA Custom Shop, we also offer a variety of output transformers, op amps, and even customized center frequencies or features to give you the sound you want. Reach out to us to whiteboard your idea! [contact@ironageaudioworks.com](mailto:contact@ironageaudioworks.com)

## Controls



The POWER switch turns the unit on and off. An LED is illuminated when the unit is powered on.

The IN/OUT button switches the EQ in when depressed. When the unit is not in, a true bypass circuit is engaged, connecting the channel input directly to the output with no other components in the signal path. When the EQ is engaged, the LED over the switch is illuminated.



Each of the three EQ bands have identical controls. The amount of boost or cut is selected by the 11 position gain switch. When the gain switch is set to cut, the filters are inserted for passive attenuation at the selected frequency. When the gain switch is at 12 o'clock no filters are in the signal path, ensuring a flat frequency response. When the switch is set to boost, the same filters are inserted to the feedback loop. This ensures equalization moves are reciprocal and reversible.

The center frequency for each band is selected by the six-position frequency switch to the right of the gain switch.

The PEAK / SHELF switch is a two position toggle which changes the shape of the filter curve for the Low and High EQ bands at the selected frequency.

The FILTER switch is a two position toggle which engages the band-pass filter.

## **Inputs and Outputs**

The input is a nominal +4 dBu amplifier balanced line input via a TRS jack on the rear panel.

The output is a +4 dBu transformer balanced line output via a TRS jack on the rear panel.

## **Chassis**

The Iron Age V2 uses a standard 19" 1RU. The unit is powered by an IEC power cord and an internal bipolar power supply.

## Technical Specifications

Gain Range	+/-12 dB, per band
Maximum Input Level	+20 dBu
Maximum Output Level	+26 dBu
Input Impedance	>10 kOhms, balanced
Output Impedance	<75 Ohms, transformer balanced
Frequency Response	+0, -0.6 dB 20Hz-20kHz
Actual Measured Noise	-110 dBA
THD @ +15 dBu output	0.014% typical
Power Consumption	150 mA max

## Frequency Response

### Low Frequency



<<to be updated>>

### Mid Frequency



<<to be updated>>

### High Frequency



<<to be updated>>

### Band Pass Filter

<<to be updated>>



## Warranty

We warrant this product to be free from defects of materials and workmanship for a period of one (1) year from the date of purchase. We will remedy any defect identified within this period by repairing or replacing the product at our option. It will be your responsibility to pay for shipping the product to us, and if the product is determined to be defective, our responsibility to pay for shipping the product back to you.

LIMITATIONS AND EXCLUSIONS. This warranty, and any other express or implied warranty, does not apply to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or modified in any way. This warranty is extended to the original purchaser only. THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, TO THE EXTENT ALLOWED UNDER APPLICABLE STATE LAW. IN NO EVENT SHALL IRON AGE AUDIOWORKS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT.

If you suspect a defect in this product, please contact us to discuss the problem (it is possible that a suspected defect could be quickly remedied or due to improper usage).

Call or email us with any issues, to say hi, or share the music you've made. We love this gear and want you to love it too.