



Important: Carefully read the entire instructions manual before hookup or operation of the EQF-100.

WARNING!: HIGH VOLTAGE! THIS UNIT CONTAINS NO USER SERVICEABLE PARTS.  
SERVICING SHOULD ONLY BE DONE BY QUALIFIED SERVICE PERSONNEL OR FACTORY.  
DO NOT OPERATE THE EQF-100 WITH THE COVERS REMOVED.

#### OPERATING MANUAL

# EQF-100

FULL RANGE PASSIVE VACUUM TUBE EQUALIZER



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## Introduction

The Summit Audio EQF-100 Full Range Equalizer uses tube and solid state technologies to produce the warm sounds associated with tubes while providing the reliability of solid state devices. The EQF-100 is a passive equalizer followed by a vacuum tube amplifier to overcome any gain loss. Connections are made by using three pin XLR connectors.

## Features:

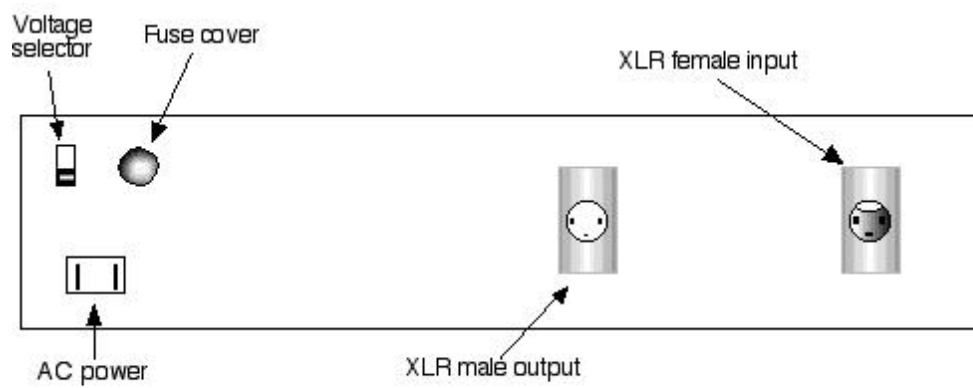
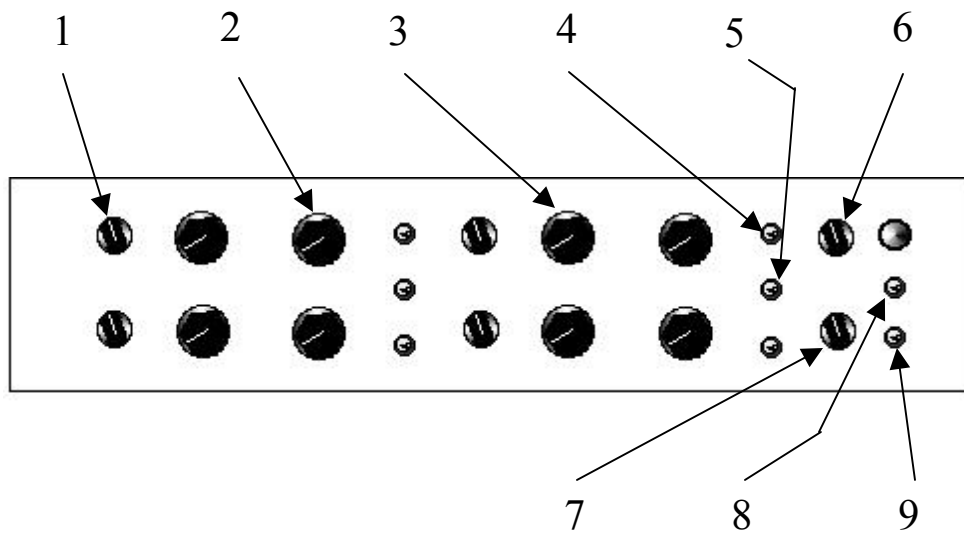
- Four bands of 7 switch selectable frequencies
- High and low filters, 3 frequencies each
- Balanced input
- Continuously variable boost or cut
- Individual in/out for each of the 4 bands
- Silent bypass switch
- 105 dB dynamic range
- 990 output stage (balanced or unbalanced)
- Three year warranty
- Transformerless signal path
- Hand crafted in the USA

Having found this manual, carefully unpack the EQF-100 and its power cord. Save the carton and packing material should it be needed for future shipping. Before powering the unit, read this manual, observing the cautions for high voltage. Proceed by doing the following:

- Set the line voltage switch to the proper position
- Determine the proper fuse size by referring to the specifications
- Check for pilot lamp illumination when powered up

## The Controls:

1. Frequency Select      Selects one of seven frequencies on which the band boost/attenuate and bandwidth controls operate.
2. Gain                      Determines the amount of boost or cut that takes place.
3. Bandwidth              Determines how much of the frequency spectrum is affected by the boost or cut operation. 0 is a narrow bandwidth and 10 is a wide bandwidth.
4. Boost-Out-Cut          This switch sets the section for boost or cut; the center position turns the sections off. Note: When going between cut and out a popping sound may occur.
5. Shelving-Resonant      Changes the high or low band between a shelf or peak type of response curve.
6. Low Filter                Determines the low frequency cut off on the high pass filter.
7. High Filter                Determines the high frequency cut off on the low pass filter.
8. Bypass Switch            Removes the equalizer from the signal path but leaves the tube amplifier in the signal path.
9. Power                      AC power on and off.



EQF-100

## EQF-100 Full Range Vacuum Tube Equalizer Applications

**Basic setup:** Plug the EQF-100 directly into the insert jack on the mixing console. Put the insert send into the XLR input, and the XLR output back into the insert return of the desired channel. If outboard preamps are being used, try sending the output of the preamp into the EQF-100. This EQ is also perfect before or after a compressor, and for side chain effects such as de-essing.

**Boosting a frequency:** Select which frequency you want to boost, put the Boost/Cut/Bypass switch to plus and increase the gain. Use the bandwidth control to affect more or less of the surrounding frequencies. A lower number on the bandwidth knob means a narrower bandwidth. If the frequency you want to boost is on the high or low band, set the Shelving/Resonant switch to resonant.

**Setting up a low or high filter:** Set all four Boost/Cut/Bypass switches to Out. Adjust the two filter settings to the desired frequencies.

**Notch filtering:** Find the approximate frequency to be attenuated (low, mid-low, mid-high, high). Set the bandwidth to wide (ten), the Boost/Cut/Bypass switch to Cut (minus), and the filter type to resonant (high and low bands only). Turn the gain all the way up (for the highest amount of cut) and start narrowing the bandwidth. Use the frequency select and bandwidth to narrow in on the frequency to be attenuated. Decrease the gain knob (decreasing the amount of cut) until the frequency is cut with the least effect on the surrounding frequencies.

**Low or high shelving:** Set the low or high EQ sections to shelving filter. Select the frequency where roll-off or boosting is to begin. Select plus or minus on the Boost/Cut/Bypass switch and turn up the gain knob to cut or boost above the high frequency selected or below the selected low frequency.

## **A Word About Tubes**

The tubes that are used in the EQF-100 are selected to give the best possible performance in the position that they are in on the printed circuit board. Switching them to different positions will cause performance deterioration on the audio path. Replacing them with “gold” or high end tube types may not be desirable. In cases that we have measured, these tubes have shown higher distortion and noise as compared to the tubes we have selected. In some cases, the so called “gold” or high end tubes have made the unit unusable. The reason for this is some of the “gold type” tubes are selected for high distortion in guitar amplifiers. Using gold tubes is no guarantee of better performance. All of these so called “Brand X” types are selected with 6.3 volts AC on the heaters, whereas Summit Audio uses 5 volts DC on the heaters for longer tube life and lower noise. The reduced gain can raise the noise floor, increase distortion, and reduce headroom.

For proper performance from a tube, the replacements must be selected using 5 volts DC on the filaments. The tubes we use are selected in the circuits that they are used in to ensure proper operation, long life, and low distortion and noise.

In at least 50% of the cases we have tested, gear that has been used for several years actually have lower noise and distortion levels than when new. This makes the question of when to replace tubes difficult to answer. If a tube turns micro-phonic, the distortion will be obvious and the tube must be replaced. However, tube life will most likely be greater than 10,000 hours of operation. Tubes are generally very reliable; don't replace them just because they are old. In the EQF-100 there are gain adjustments that will need to be checked when the tubes are replaced, or else the metering could become inaccurate and the noise floor could change. Replacement should be done on the bench with a distortion analyzer attached to ensure that the distortion levels are proper and it is comprised of second order harmonics.

Before replacing the tubes in your EQF-100, please talk to your dealer, call Summit Audio, or find a technician who has experience working with tubes and high end audio equipment.

### Electrical Connections:

*(This EQF-100 is wired as a pin 2 hot device. Units made before March 1<sup>st</sup>, 2003 come factory wired with pin 3 hot.)*

#### Input:

Unbalanced:	3 pin XLR Connector	Balanced:	3 pin XLR Connector
	Pin 1 – Ground		Pin 1 – Ground
	Pin 2 – (+) Signal		Pin 2 – (+) Signal
	Pin 3 – Connect to Pin 1		Pin 3 – (-) Signal

#### Output:

Unbalanced:	3 pin XLR Connector	Balanced:	3 pin XLR Connector
	Pin 1 – Ground		Pin 1 – Ground
	Pin 2 – (+) Signal		Pin 2 – (+) Signal
	Pin 3 – Connect to Pin 1		Pin 3 – (-) Signal

Note: When running an unbalanced output it is best to connect pin 3 to pin 1 in the connector that plugs into the EQF-100.

Allow the EQF-100 to warm up for at least 15 minutes before using it in your processing chain. The tubes and other circuitry need time to reach an electronic equilibrium before they will operate at optimal specifications. For the longest life, it is recommended that you turn off the unit when it is not in use.

Please mount the unit in your rack, making sure that there is sufficient ventilation, especially on the right and left side of the chassis. The EQF-100 will generate a significant amount of heat; therefore, it is necessary to have good air flow to prevent damage to your EQF-100 or any other pieces of gear housed in the rack with it.

The tubes in your Summit Audio EQF-100 have been intensely screened for desired distortion and gain characteristics. We recommend that you do not replace the tubes with “guitar amp” tubes. Please consult your dealer about availability of appropriate replacement tubes. These can also be ordered directly from Summit Audio. Please fill out the enclosed warranty card. If you have any questions about the operation of your EQF-100, please do not hesitate to call our customer service department at 775-782-8838 or contact us on the internet at: [sound@summitaudio.com](mailto:sound@summitaudio.com).

### Specifications:

Note on specifications: Summit Audio is uncompromisingly committed to excellence. All of our specifications are made with the latest technology and are UNWEIGHTED measurements. What does this mean? When measurements are “weighted” (e.g. “A” weighted, dB (B), dB C weighted, etc.), the measurement devices are basically EQed or filtered before the measurement is taken. This filtering was developed so that sound pressure level (SPL) measurements can more nearly match human’s non-linear hearing characteristics. However, when used in noise, frequency response, and distortion

*measurements, weighting will alter the results. Completely flat frequency measurements are key to giving accurate specifications. Summit Audio devices are the highest quality professional audio gear and the specifications below are made with the flattest possible unweighted measurements, giving the most accurate results.*

**OUTPUT:** +4 dBu designed operating level. The output is balanced using 990 operational amplifiers. Output impedance is 75Ω . The recommended output load is 600 Ω or more. Maximum output level is +25 dBu.

**INPUT:** The input is electronically balanced with an impedance of 20k Ω.

**DISTORTION:** Better than 0.05% THD at 1 kHz (unweighted)

**FREQUENCY RESPONSE:** 5 Hz to 100 kHz (balanced output)

**NOISE:** Less than -80 dBu

**BAND 1 FREQUENCIES:** 33 Hz, 56 Hz, 100 Hz, 180 Hz, 220 Hz, 270 Hz, 390 Hz

**BAND 2 FREQUENCIES:** 250 Hz, 330 Hz, 470 Hz, 560 Hz, 680 Hz, 820 Hz, 1.2 kHz

**BAND 3 FREQUENCIES:** 1 kHz, 1.5 kHz, 1.8 kHz, 2.2 kHz, 2.7 kHz, 3.9 kHz, 5.6 kHz

**BAND 4 FREQUENCIES:** 3.3 kHz, 4.7 kHz, 6.8 kHz, 8.2 kHz, 10 kHz, 12.5 kHz, 15 kHz

**HIGH FILTER:** 8.2 kHz, 12 kHz, 18 kHz

**LOW FILTER:** 22 Hz, 47 Hz, 82 Hz

**PANEL SIZE:** Standard 19" by 3.5" (2 units of rack space)

**DEPTH:** 10.5" in addition to user's I/O cabling

**POWER:** 35 watts, 115 or 230 volts operation, 50 or 60 Hz

**FUSE:** 0.5 Amp for 115VAC and 100VSC, 0.25 AMP for 230 VAC.

**SHIPPING WEIGHT:** 21 lbs. (9.45 kg.)