Electro-Voice®

EQ-215

Stereo Two-Third Octave Graphic Equalizer

- **15 2/3-octave filters on each channel for sound system equalization**
- **Switchable infrasonic filter and ground-lift**
- **Selectable (6 or 12 dB) range of boost/cut**
- **Active-balanced 3-pin XLR-type and TRS 1/4-inch inputs**
- **Space saving on rack space chassis with internal power supply with IEC connector**

Description

The Electro-Voice EQ-215 is a boost-and-cut $^{2}/_{3}$-octave graphic equalizer whose primary use is for tuning the overall frequency response of a sound reinforcement system, both to increase gain-before-feedback and to compensate for the deficiencies in the acoustic environment and the sound system.

Features

The variable-Q active filter sets used in the EQ-215 allow effective equalization with few problematic side effects. As Figure 1 illustrates, the filter characteristics vary with the amount of boost or cut used. At low control settings, the filter Q is very wide. As the control is boosted or cut, the filter Q narrows so that there is minimum interaction between adjacent frequency bands.

Each of the 15 $^{2}/_{3}$-octave filters provides 12 dB of boost or cut at ISO frequencies 25 through 16,000 Hz (see Figure 2). The faders have a positive detent in the center, flat-response position.

The gain control also has a center detent at unity gain. It should be adjusted so that the adjacent peak LED rarely or never lights. This will help achieve maximum possible signal-to-noise ratio.

The infrasonic low-cut filter, with a 43-Hz corner frequency and a slope of 18 dB per octave, is engaged by the front-panel Lo-Cut switch (see Figure 3). For most applications, the filter should be engaged. Most professional speaker systems have little output below 45 Hz. At best, driving them in this range wastes amplifier power, and can result in excessive, ultra-low-frequency cone motion which distorts the output in the reproduced frequency range and, most seriously, could damage the speaker from excessive cone motion or "bottoming."

The range select switch allows selection of either 6 or 12 dB of boost and cut. The 6-dB range will allow more control selectivity while the 12-dB range allows for greater range of adjustment.

The EQ-215 has an IEC connector to allow compatibility with ac connections anywhere. The integral fuseholder also doubles as the voltage selector to allow for operation anywhere in the world.

Figure 5 shows front and rear panel details.

Architects' and Engineers' Specifications

The equalizer shall have 15 filters per channel centered at the ISO standard $^{2}/_{3}$-octave frequencies between 25 and 16,000 Hz. The filters shall provide either 6 or 12 dB of boost or cut and be set by 22.5-mm linear controls. The front panel shall have the following controls: a gain control that is continuously variable from -12 dB to +12 dB from unity gain; an infrasonic filter with a slope of 18 dB per octave and a corner frequency of 43 Hz; a range switch to select either 6 or 12 dB of boost or cut from the filters; an EQ-on switch to put the filters in the signal path and an on/off switch.

The rear panel shall have the input and output connectors for each channel, a ground-lift switch and an IEC connector with an integral fuse holder that allows voltage selection by the way it is inserted.

The input and output of the equalizer shall be accessible via 3-pin XLR-type and $^{1}/_{4}$-inch TRS phone jacks located on the rear of the unit. The input shall be actively balanced. The output shall be balanced on the 3-pin XLR-type plug.

The equalizer shall meet or exceed the following performance specifications: frequency response at unity gain, …1 dB 20 - 20,000 Hz; total harmonic distortion less than 0.01%, 20 - 20,000 Hz at 0 dBu; a noise level of less than -97 dBu; gain of ±6 dB or ±12

dB; balanced-input impedance of 44,000 ohms; output impedance of 120 ohms; a maximum input level of +20 dBu at unity gain; a maximum output level of +20 dBu into loads greater than or equal to 600 ohms.

The equalizer shall operate on 120 V/240 V ac, 50/60 Hz, and consume less than 18 watts. The unit shall be operable up to 50 degrees Centigrade or 122 degrees Fahrenheit. The chassis shall be steel with a gray front panel and black top, bottom, sides and back with white nomenclature. The chassis shall occupy one rack space in a standard 19-inch rack (height: 1.73 inches; depth: 9.24 inches; width: 19 inches). The weight shall be 6.0 lb (2.7 kg). The equalizer shall have a three-year parts-and-labor warranty. The equalizer shall be the Electro-Voice EQ-215.

Limited Warranty

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice Service or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice Service or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice Service at 600 Cecil Street, Buchanan, MI 49107 (800/234-6831 or FAX 616/695-4743). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **Electro-Voice Electronics** are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

For warranty repair or service information, contact the service repair department at: 616/695-6831 or 800/685-2606.

For technical assistance, contact Technical Support at 800/234-6831 or 616/695-6831, M-F, 8:00 a.m. to 5:00 p.m. Eastern Standard Time.

Specifications subject to change without notice.

FIGURE 1 — Filter Response at Different Slider Positions Showing Q of Filter Changing.

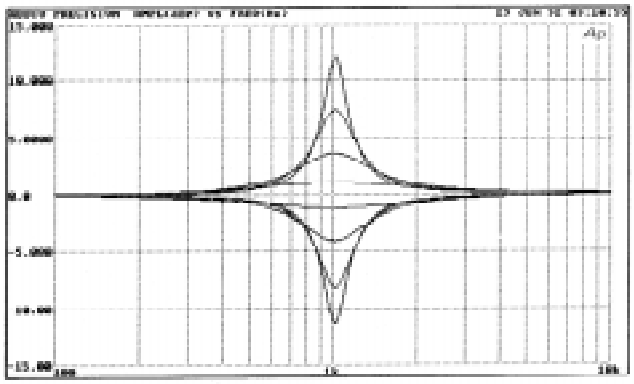


FIGURE 2 — Filter Response at …12-dB Slider Positions

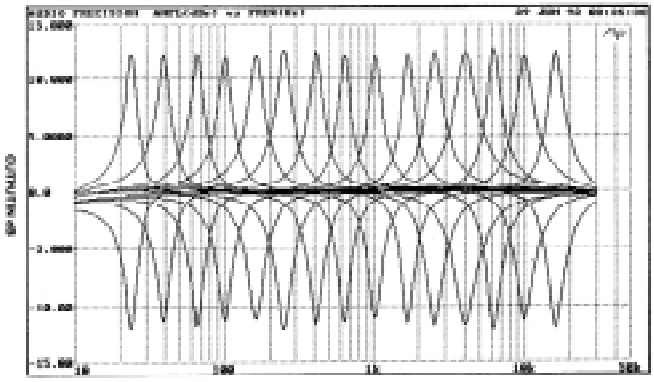


FIGURE 3 — High-Pass Filter Response, Upper Trace Lo-Cut Off, Lower Trace Lo-Cut On

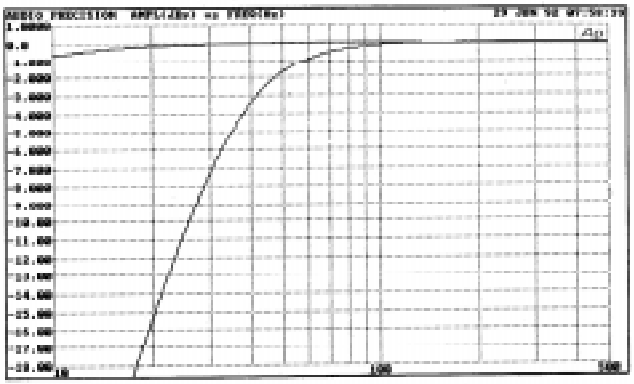


FIGURE 4 — Frequency Response, +6-dB Gain Position(high-pass filter off)

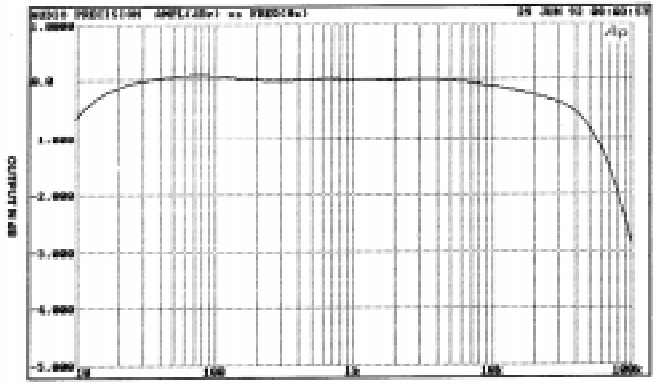
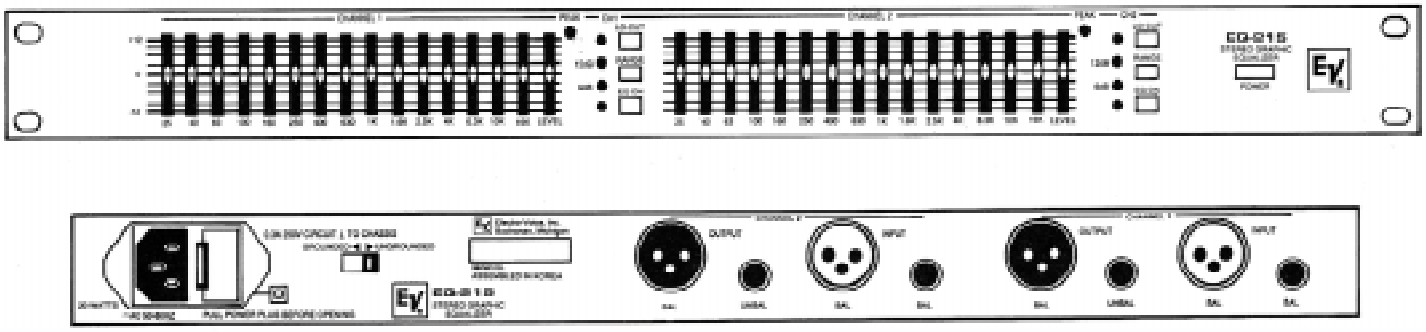


FIGURE 5— Front and Back Panel Details



EQ-215/Graphic Equalizer

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General Specifications

Conditions:

1. 0 dBu = 0.775 volts rms.
2. 120 volt ac line input voltage maintained for all tests unless noted.
3. 0 dBm = 1mW into 600 ohms.

Frequency Response at Unity Gain, High-Pass Filter Disengaged (see Figure 4):

20 Hz - 20,000 Hz …1 dB

Total Harmonic Distortion at Unity Gain, 20 - 20,000 Hz, 0 dBu Output:

<0.01%

Noise at Unity Gain:

<–97 dBm A-weighted

Front-Panel Controls, Each Channel:

15 center-detent boost/cut slide controls; level control with center detent; low-cut select switch; range select switch; EQ-on switch

LED Indicators, Each Channel:

Peak output level; 6- or 12-dB range and EQ on

Chassis Construction:

Painted steel

Colors:

Gray front panel with white nomenclature; black top, sides, rear and bottom.

Mounting:

Standard 19-in. rack, 1.73 in. high, 9.24 in. deep behind mount

Supplied Accessories:

Power cord; one package of mounting screws; one package of rubber feet; one decal and fuse for 230-V ac operation; owner's manual and service information

Operating Environment:

Up to 50° C (122° F)

Power Requirements:

110 or 220 V ac, 50/60 Hz, 18 watts

Overall Dimensions:

44 mm (1.73 in.) high;
483 mm (19.0 in.) wide;
235 mm (9.24 in.) deep

Net Weight:

2.7 kg (6.0 lb)

Input Specifications

Type:

Electronically balanced

Impedance,

Unbalanced:

22,000 ohms

Balanced:

44,000 ohms

Maximum Input Level at Unity Gain:

+20 dBu (7.75 V rms)

Connectors,

Type:

Parallel female 3-pin XLR-type and $^1/_4$-in. phone jack TRS, balanced or un balanced

XLR-type Connector Format (IEC Standard 268):

Pin 1 shield;
Pin 2 high;
Pin 3 low

Output Specifications

Type:

Electronically balanced XLR-type; unbalanced $^1/_4$-inch

Impedance,

Balanced:

120 ohms

Unbalanced:

60 ohms

Maximum Output Level:

+20 dBu

Filter Specifications

Type:

Variable-Q active filter set

Center Frequencies (15 bands per channel on ISO two-thirds-octave centers):

25 Hz, 40 Hz, 63 Hz, 100 Hz, 160 Hz, 250 Hz, 400 Hz, 630 Hz, 1,000 Hz, 1,600 Hz, 2,500 Hz, 4,000 Hz, 6,300 Hz, 10,000 Hz, and 16,000 Hz

Maximum Boost/Cut

12 dB

Infrasonic Low-Cut Filter, Corner Frequency (3 dB down):

43 Hz

Slope:

18 dB per octave

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