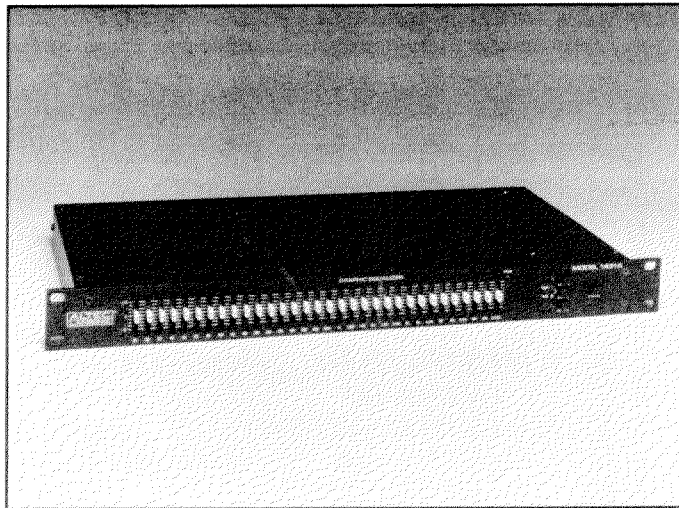




# 1431A

## Variable Q Active Filter

### 31 Band $\frac{1}{3}$ Octave Equalizer



#### KEY SYSTEM SPECIFICATIONS

**Center Frequencies:** 20, 25, 32, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k, 10k, 12.5k, 16k, 20k Hz

**Maximum Boost/Cut:** 12 dB

**Low-Cut Filter  
Corner Frequency:** 43 Hz

**Frequency Response  
at Unity Gain:**  
(High-Pass Filter Disengaged) 20 Hz - 20 kHz,  $\pm 1$  dB

**Total Harmonic Distortion  
at Unity Gain:**  
(20 Hz - 20 kHz, 0 dBu Output) < 0.01%

**Noise at Unity Gain:** < -85 dBu, 20 Hz - 20 kHz

**Maximum Input Level  
at Unity Gain:** + 20 dBu (7.75 Vrms)

**Maximum Output Level:** + 20 dBu (7.75 Vrms)

#### KEY FEATURES

- ★ Variable Q filter set
- ★ 31 bands of boost and cut
- ★ Select between 6 dB or 12 dB of boost and cut

#### DESCRIPTION

The Altec Lansing **1431A** is a boost and cut  $\frac{1}{3}$ -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.

The active Q variable filter set utilized in the **1431A** allows 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

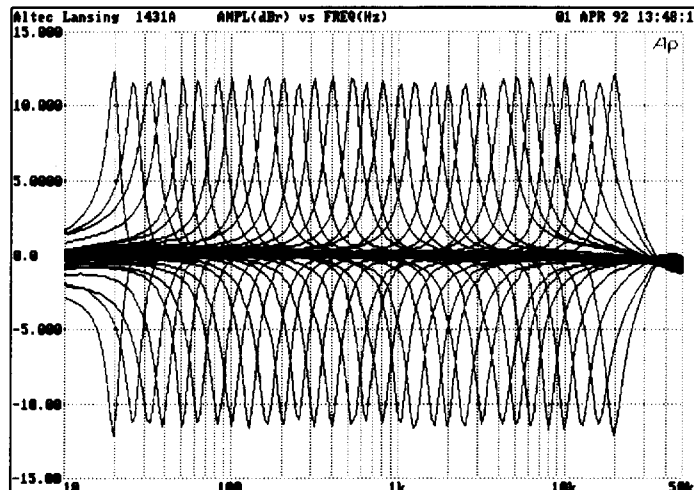
narrows so that there is minimum interaction between adjacent frequency bands. The filter response is designed to affect a  $\frac{1}{3}$ -octave range.

Each of the 31  $\frac{1}{3}$ -octave filters provide 12 dB of boost or cut at ISO frequencies 20 Hz through 20,000 Hz. The faders have a positive detent in the center, flat-response position. The gain control also has a center detent at unity gain.

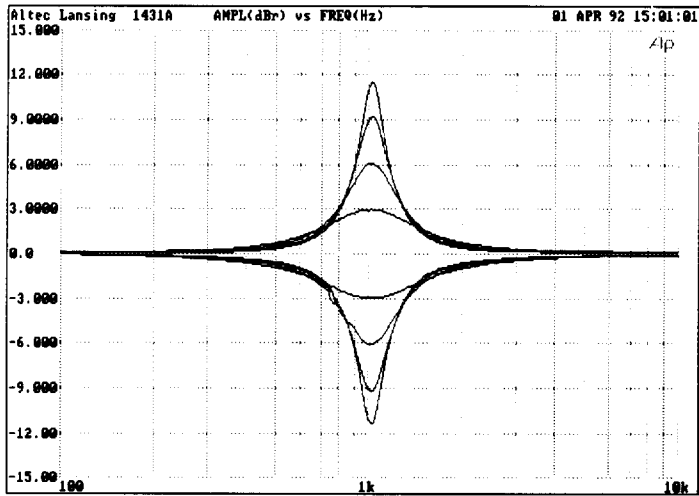
A low-cut filter switch, with a 43 Hz corner frequency and 18 dB per octave slope, is located on the front panel. A range select switch allows selection of either 6 dB or 12 dB of boost or cut.

# 1431A Specifications (cont'd)

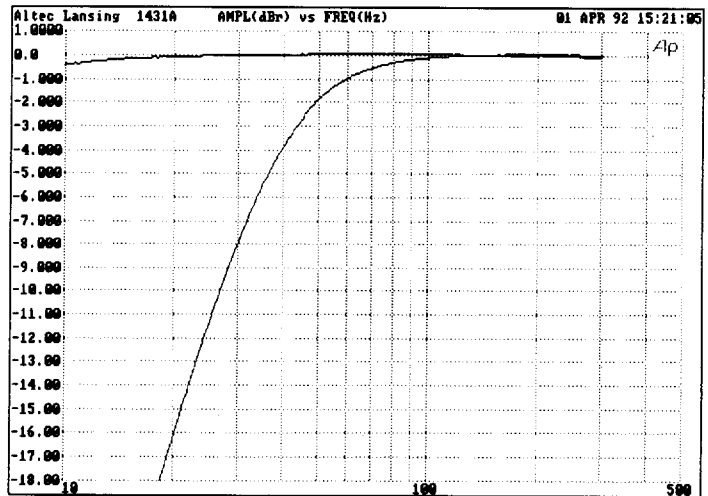
<b>Input:</b>	(Ref. 0 dBv = 0.775 Vrms)		
<b>Type:</b>	Electronically balanced		
<b>Impedance:</b>	44 k $\Omega$ balanced		
	22 k $\Omega$ unbalanced		
<b>Normal level:</b>	0 dBv (0.775 Vrms)		
<b>Output:</b>	(Ref. 0 dBm = 0.775 Vrms across 600 $\Omega$ )		
<b>Type:</b>	Electronically balanced	<b>Connectors:</b>	
<b>Impedance:</b>	120 $\Omega$ balanced	<b>Input:</b>	3 Terminal barrier strip
	60 $\Omega$ unbalanced	<b>Output:</b>	3 Terminal barrier strip
<b>Load Impedance:</b>	600 $\Omega$ or higher	<b>AC Power:</b>	110, 220 Vac 50/60 Hz 18 Watts
<b>Peak Indicator:</b>	Red LED +14 dBu (6 dB before clipping)	<b>Operating Temperature Range:</b>	Up to 50° C (122° F)
<b>Operating Gain:</b>	0 dB	<b>Dimensions:</b>	
<b>Available Gain:</b>	$\pm 6$ dB or $\pm 12$ dB	<b>Height:</b>	1.73 inches (44 mm)
<b>High-Pass Filter:</b>	Switch selectable with cutoff below 43 Hz and a slope of 18 dB per octave.	<b>Width:</b>	19.0 inches (483 mm)
		<b>Depth:</b>	9.24 inches (235 mm)
<b>Controls:</b>	<ul style="list-style-type: none"> <li>• 31 center detent slide controls at <math>\frac{1}{3}</math>-octave center frequencies from 20 Hz to 20 kHz, selectable <math>\pm 6</math> dB or <math>\pm 12</math> dB boost/cut.</li> <li>• LEVEL control with center detent</li> <li>• LO-CUT select switch</li> </ul>	<b>Net Weight:</b>	7.0 lbs (3.4 kg)
		<b>Enclosure:</b>	Rack Mount Chassis (1 $\frac{1}{4}$ -inch rack space)
		<b>Accessories:</b>	(Included) Power cord, pkg. of mounting screws, pkg. of rubber feet, decal and fuse for 230 Vac line operation, 1431A Installation and Operating Instructions



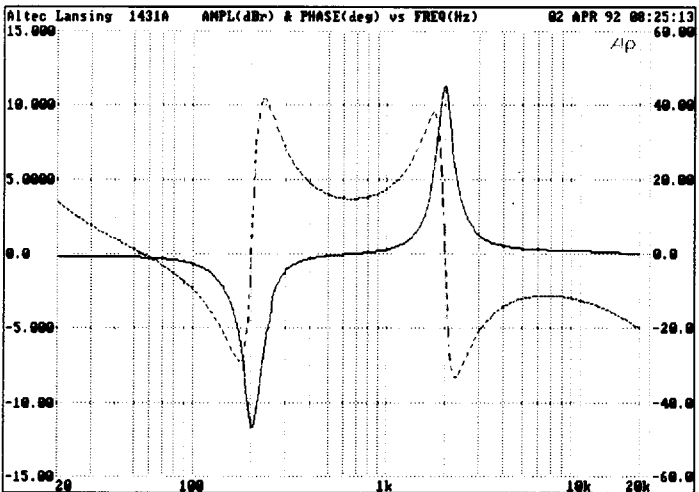
**Figure 1**  
 **$\pm 12$  dB Control Settings, Individually Set**



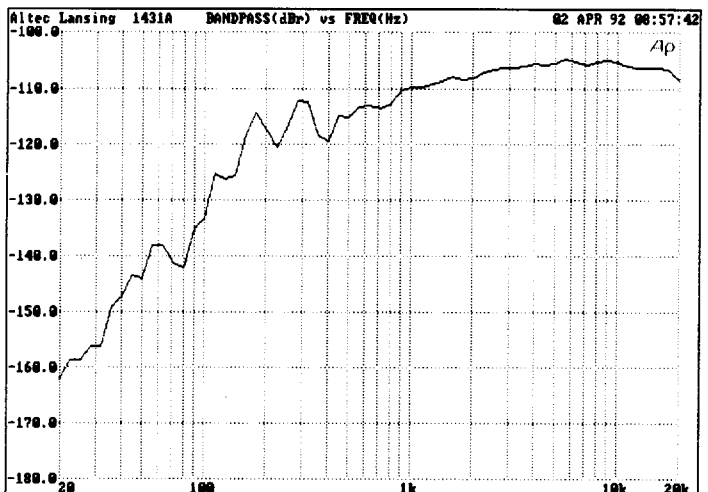
**Figure 2**  
Filter Characteristics at 1 kHz ( $\pm 12$  dB)



**Figure 3**  
Lo-Cut Filter Roll-Off Characteristics



**Figure 4**  
200 Hz Filter Set at -12 dB, 2 kHz Filter at +12 dB.  
Respective Phase Angles (deg) Vs. Frequency (Hz)



**Figure 5**  
A-Weighted Noise (dBr) Vs. Frequency (Hz)

# ARCHITECT'S and ENGINEER'S SPECIFICATION

The equalizer shall have 31 filters centered at the ISO standard  $\frac{1}{3}$ -octave frequencies between 20 and 20,000 Hz. Furthermore, the filters shall provide either 6 dB 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; a high-pass filter with a slope of 18 dB per octave and a corner frequency of 43 Hz; a range switch to select either 6 dB 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 input and output connectors, 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  $\frac{1}{4}$ -inch TRS phone jacks. 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,  $\pm 1$  dB, 20 - 20,000 Hz at 0 dBu; a noise level of less than -85 dBu; gain of  $\pm 6$  dB or  $\pm 12$  dB; balanced-input impedance of 44 k $\Omega$ ; output impedance of 120  $\Omega$ ; 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  $\Omega$ .

The equalizer shall operate on 120/240 Vac, 50/60 Hz, and consume less than 18 watts. The unit shall be operable over the temperature range as high as 50° C or 122° F. 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 7 lbs.

The equalizer shall be the Altec Lansing model 1431A.



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