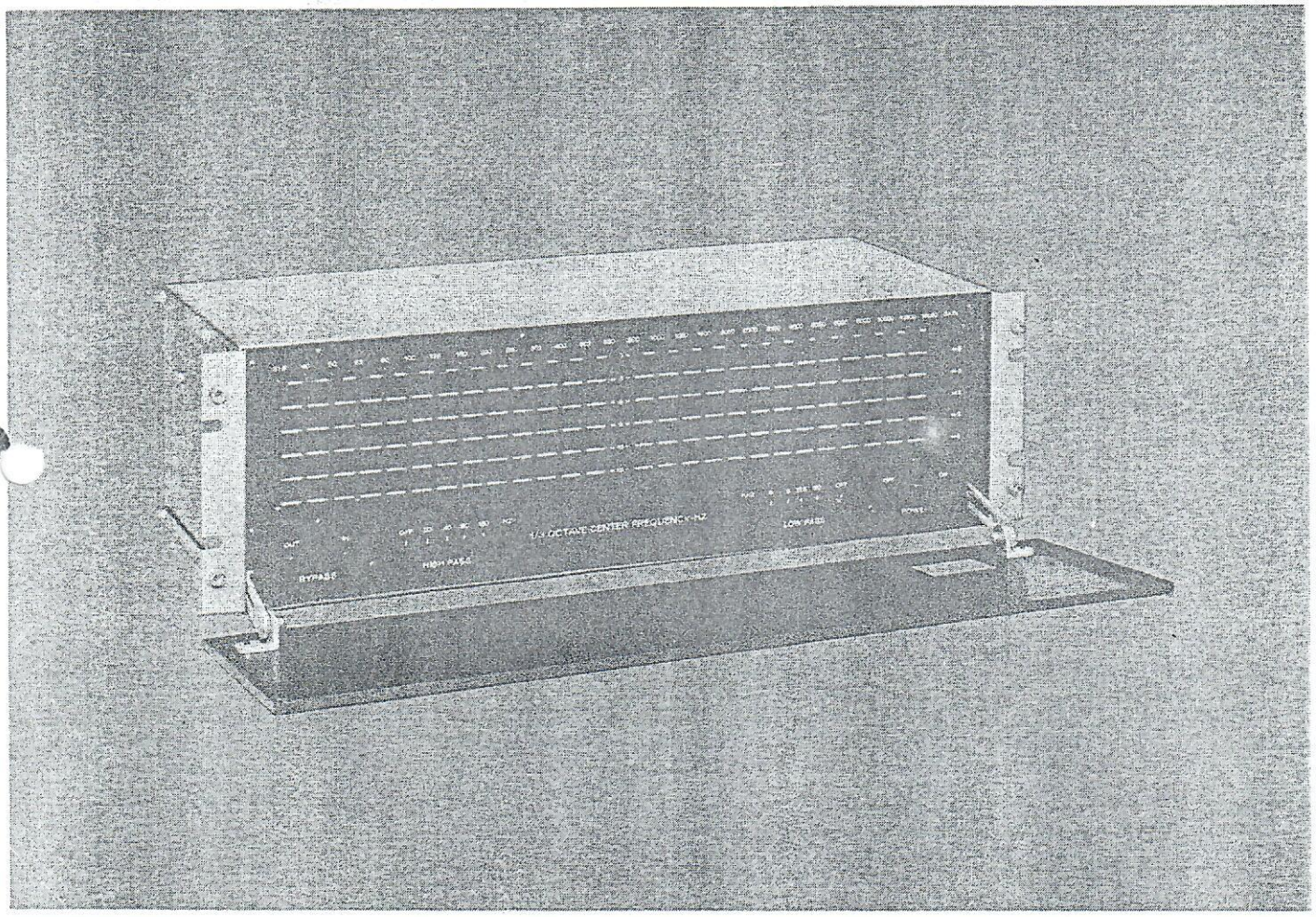
ALTEC
SOUND PRODUCTS DIVISION

1650 ACTIVE EQUALIZER



DESCRIPTION

The ALTEC 1650 Active Equalizer is designed to provide accurate equalization of the entire audio spectrum for professional and industrial applications. The 1650 contains 28 active band-rejection filters at ISO preferred ⅓-octave center frequencies from 31.5 to 16,000 Hz. Each filter section provides up to 15 dB attenuation at its center frequency and is skirted to cross over with adjacent sections at −7 dB, combining to give ripple-free summation over 85% of the range. A gain control restores equalization losses.

The high- and low-pass filters roll off at 18 dB/octave with continuously variable 3 dB down points. The control panel is calibrated in markings of OFF/20 Hz/40 Hz/80 Hz/160 Hz (high pass), and OFF/5 kHz/8 kHz/12.5 kHz/20 kHz (low pass). A slide-type bypass switch allows the filter set to be conveniently switched in and out of the circuit.

A hinged panel cover eliminates accidental movement of the gain or filter controls. When the panel is in place, only the illuminated power switch is accessible.

Features include balanced operation with 150-ohm or 600-ohm output impedances and dual-level gain, offering compatible use in high-level (up to +21 dBm) or low-level (up to +1 dBm) systems. The 1650 has input impedances of 600 or 15,000 ohms unbalanced (direct), or 150,600 or 15,000 ohms balanced (with accessory transformers). The 1650 will also accept the ALTEC plug-in pink noise generator for convenient calibration and system check.

SPECIFICATIONS

Type:	Active filter set with 28 band-rejection filters at ⅓-octave intervals
Operating Gain:	0 dB
Available Gain:	20 dB (to restore equalization loss)
Input Level:	+21 dBm or +1 dBm maximum (switchable)
Output Level:	+21 dBm or +1 dBm maximum (switchable)
Frequency Response:	±1 dB from 20-20,000 Hz
Total Harmonic Distortion (THD):	Not more than 0.5% at full rated output and fully restored gain
Input Impedance:	600 or 15,000 ohms unbalanced (direct); 150, 600 or 15,000 ohms balanced (with accessory transformers)
Load Impedance:	150 or 600 ohms balanced
Noise Level (measured without insertion loss or makeup gain):	−90 dBm (+21 dBm input) −100 dBm (+1 dBm input)
Power Required:	120/240V ac, 50/60 Hz, 5W —or— 24/28V dc at 0.1A (automatic transfer to dc mode if ac power fails)
Controls:	28 Detented slide-type filter controls on ⅓-octave ISO centers from 31.5-16,000 Hz, 15 dB depth each center, combining with adjacent filters at −7 dB 1 Detented slide-type gain-restoring control 2 Horizontal slide-type controls with calibrated panel markings. High pass marked at OFF/20 Hz/40 Hz/80 Hz/160 Hz. Low pass marked at OFF/5 kHz/8 kHz/12.5 kHz/20 kHz. 1 Slide-type level switch; +21 dBm, +1 dBm (rear) 1 Rocker-type illuminated power switch 1 Slide-type bypass switch
Dimensions:	5¼"H x 19"W x 8"D (13.3 cm H x 48.3 cm W x 20.3 cm D)
Weight:	17 pounds (7.7 kg)
Color:	ALTEC green on cover panel. Matte black finish on inner panel.
Accessories (must be ordered separately):	ALTEC plug-in modules 15356A, 15335A, 8080B

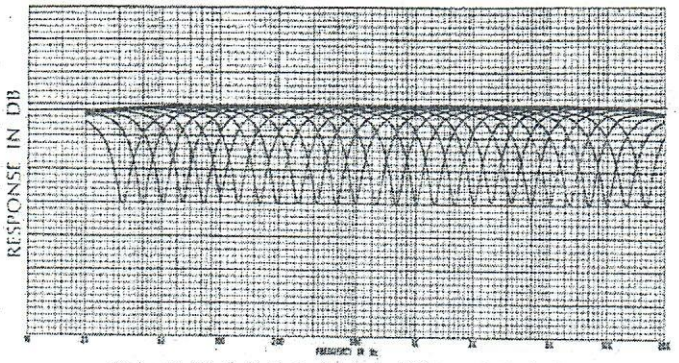


Figure 1. 28 ⅓-Octave-Centered Filters at Maximum Attenuation (—15 dB). Each Section Plotted Independently

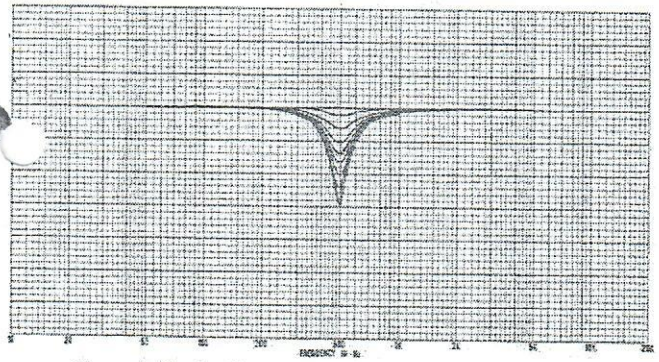


Figure 2. Single Filter, 500 Hz, Shown in Each Detented Position of Attenuation

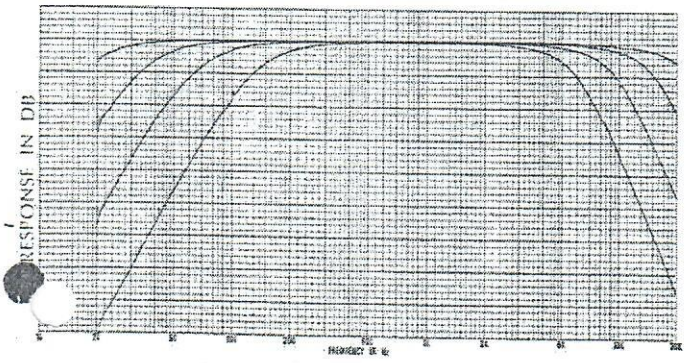


Figure 3. High-Pass and Low-Pass Functions (18 dB/oct) Plotted Independently

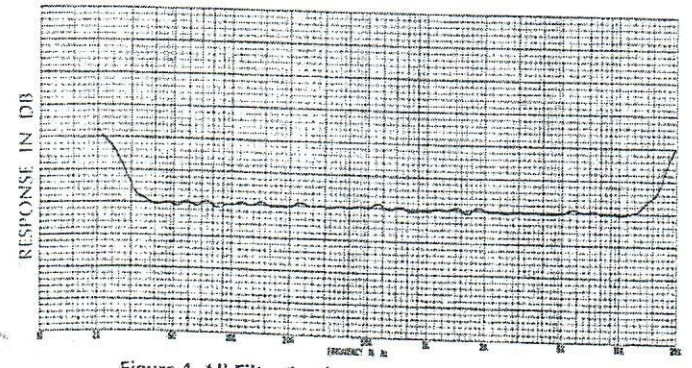


Figure 4. All Filter Sections Set at —7 dB Attenuation Illustrating Slight Degree of "Ripple" (±½ dB) Characteristic of Proper Interaction Between Sections

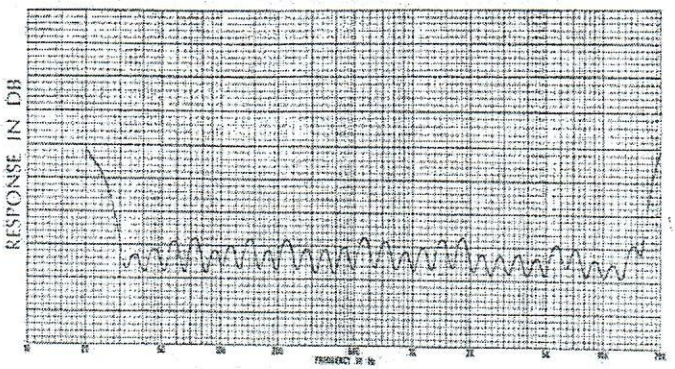


Figure 5. All Filter Sections Set for Full Attenuation

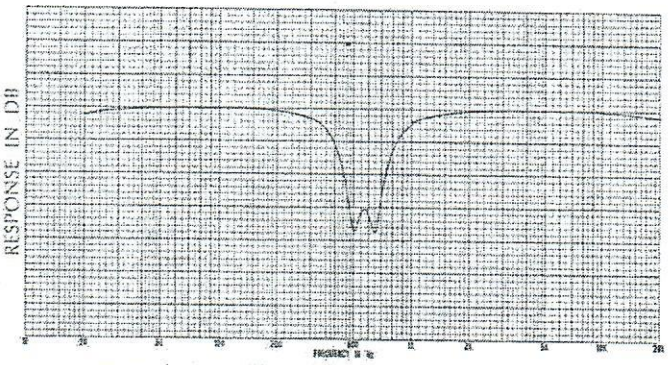


Figure 6. Two Adjacent Filters, 500 Hz and 630 Hz, Set for Full Attenuation

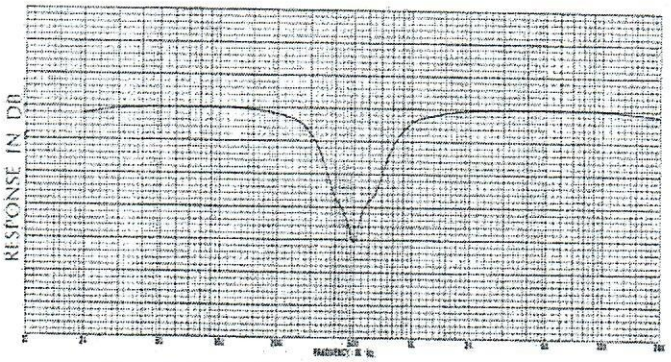


Figure 7. 500 Hz Filter Set at —15 dB, 400 and 630 Hz Filters Set at —8 dB

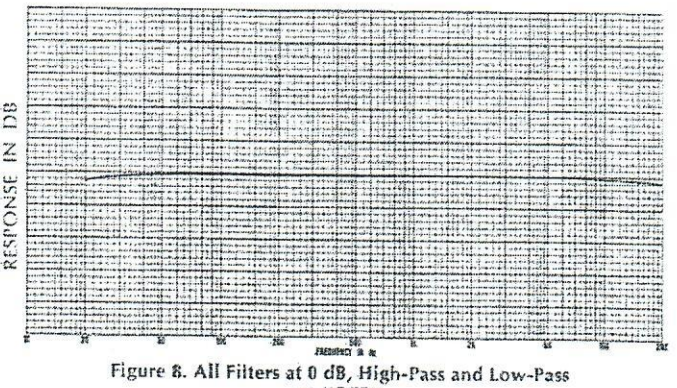


Figure 8. All Filters at 0 dB, High-Pass and Low-Pass at "OFF"

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The active equalizer shall contain a power supply capable of operation from a 120/240V ac, 50/60 Hz line or from a 24/28V dc battery. Output shall be transformer-coupled for 150-ohm or 600-ohm balanced operation. The equalizer shall be capable of accepting inputs of 150, 600 or 15,000 ohms balanced, or 600 or 15,000 ohms unbalanced. The active equalizer shall contain 28 single-channel, active, band-rejection filters on ISO preferred ⅓-octave center frequencies ranging from 31.5 through 16,000 Hz. Each filter shall provide up to 15 dB attenuation at center frequency, shall be skirted to cross over with adjacent filter sections at −7 dB, and shall combine to provide ripple-free summation through approximately 85% of the adjustable range. A gain control shall be provided to restore program level after equalizing. The gain control and all filter controls shall be of the linear-slide detented-position type. The active equalizer shall provide 18 dB/octave high-pass and low-pass filters. These filters shall have two slide-type controls for continuously varying the 3 dB down points. These controls shall have calibrated panel markings of OFF/20 Hz/40 Hz/80 Hz/160 Hz (high pass) and OFF/5 kHz/8 kHz/12.5 kHz/20 kHz (low pass).

The active equalizer shall meet the following criteria. Operating gain, 0 dB. Available gain to restore equalization loss, 20 dB. Input level, +21 dBm or +1 dBm maximum. Output level, +21 dBm or +1 dBm maximum. Frequency response, ±1 dB from 20-20,000 Hz. THD, not more than 0.5% at full rated output and fully restored gain. Input impedance; 150, 600 or 15,000 ohms balanced (with accessory transformers), or 600 or 15,000 ohms unbalanced (direct). Load impedance; 150 or 600 ohms balanced. Noise level (measured without insertion loss or makeup gain), −90 dBm at +21 dBm input level, −100 dBm at +1 dBm input level. Dimensions. 5¼"H x 19"W x 8"D. Weight, 17 pounds.

The active equalizer shall be the ALTEC Model 1650.

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