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AMERICAN AUDIO®

Graphic Equalizer

Dual 31 Band

Mono 31 Band

Dual 15 Band

Long Throw Dual 15 Band

Instruction Manual

General

Two channel 31 band 1/3 octave graphic equalizer, is a constant Q circuitry with a 3% center frequency accuracy. Special features include variable Low and High cut filters, selectable range 6dB or 12dB, active balanced and unbalanced input/output connectors, RFI filters, variable level control, passive bypass switch, overload threshold LED, ground lift switch and selectable line voltage switch.

Single channel 31 band 1/3 octave graphic equalizer, is a constant Q circuitry with a 3% center frequency accuracy. Special features include selectable range 6dB or 12dB, active balanced and unbalanced input/output connectors, RFI filters, variable Low cut filter, variable level control, passive bypass switch, overload threshold LED, ground lift switch and selectable line voltage switch.

Two channel 15 2/3 octave band graphic equalizer with frequency control of 25Hz to 16KHz. Is a constant Q circuitry with a 3% center frequency accuracy. Special features include selectable range 6dB or 12dB, active balanced and unbalanced input/output connectors, RFI filters, variable level control, passive bypass switch, overload threshold LED, ground lift switch and selectable line voltage switch.

Long throw two channel 15 band 2/3 octave graphic equalizer, is a constant Q circuitry and with a 3% center frequency accuracy, and frequency control, from 25Hz to 16KHz. Special features include selectable range 6dB or 12dB, active balanced and unbalanced input/output connectors, variable level control, passive bypass switch, signal and overload threshold LED, ground lift switch and selectable line voltage switch.

Installation equalizers are designed for mounting in a standard 19" equipment rack or one of the many rack type portable cases available on the market. The vertical space are 3.2 inches and 1.75 inches. All four models are 8.5 inches in depth.

Power connectors

If they are EQ of AC power supply, the series of graphic equalizers are for operation from 120-240 volt, 50-60Hz main supply. If they are EQ of DC power

supply, the series are for operation from DC 12 volt power supply.

DO NOT REMOVE THE CENTER GROUNDING PIN; In new installations and portable sound systems, or any situation in which the mains power is in question, it is wise to confirm the voltage and select the appropriate line voltage switch **BEFORE** connecting the instrument to power sources.

Input Output Connections

The series of graphic equalizers have three paralleled input and output connectors. XLR and 1/4 TRS are actively balanced with Pin 2 or the tip being Hi, Pin 3 or the ring being Lo, and Pin 1 or sleeve being ground. Unbalanced operation requires using the RCA phono connector or use Pin 2 of the XLR or tip 1/4" TRS as Hi(+) and Pin 1 of the XLR or sleeve of the 1/4" TRS as ground.

Balanced output requires using Pin 2 of the XLR or the tip of the 1/4" TRS as output Hi (+) and using pin 3 of the XLR or the ring of the 1/4" TRS as Lo(-). It does not require pin 1 or signal ground. The signal exists differentially between the two balanced leads. Ground is used only for shielding to prevent potential hum.

Paralleling inputs and outputs may be accomplished by using any of the three connectors.

Note: 1/4" TRS are normally used.

Signal levels

Signal levels from -10 dBu to +4 dBu are considered normal and at least 20dB of headroom exists above these levels. Do not directly connect microphones into the equalizers. Microphones require a pre amp.

Chassis Grounding

The equalizers are equipped with a rear panel Ground lift switch. After setting up your system and the system exhibits excessive hum or buzzing, the problem is that there is a ground incompatibility between your equalizer and other equipment in the same system. There are several combinations that can be attempted. **Note: ALWAYS TURN YOUR AMPLIFIERS DOWN BEFORE CHANGING YOUR GROUNDS AROUND.** Try different combinations of

lifting grounds on units that are supplied with ground lift switches or make sure all chassis are connected to earth ground, either through the A.C. power cord ground or by the front panel rack mount screws.

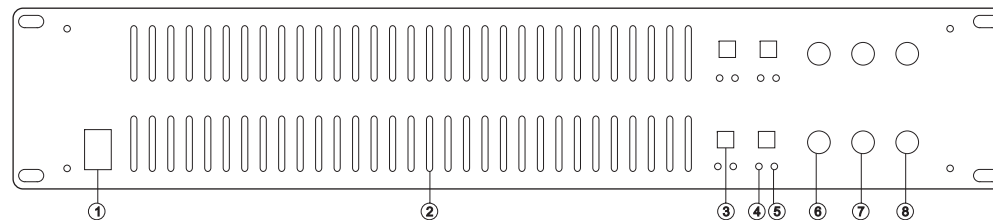
Operating Instructions

Before starting to equalize your sound system there is some information you should know and procedures you should follow. All equalizers are equipped with a bypass switch with an LED indicator. The bypass switch, when activated, the LED is on and cancels all equalization settings, signal flows through at unity gain. Also included is a range selection switch with LED indicators, 6dB = green, 12dB = yellow. In conjunction to the range selection switch there is a level control potentiometer. The level control operates between off and +6dB. Note: If there is too much gain your equalizer has a red overload LED. The overload LED illuminates when signal reaches 5dB prior to clipping. If this situation occurs and the overload LED flashes occasionally, this is okay, but if the overload LED is steadily on you must readjust the level control. Below are some tips while doing the initial set up.

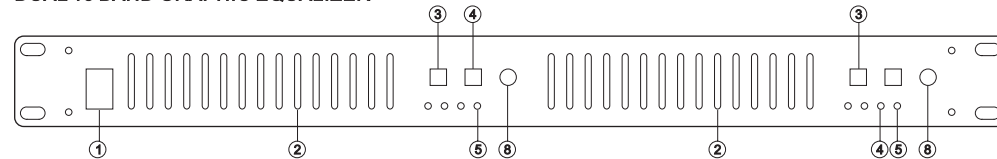
1. Set channel levels to the center detent 0dB on the front panel.
2. Select the bypass switch (Note: The RED LED is ON.)
3. All slide controls to the center detent or 0dB.
4. Select the 6dB range switch (green LED on).
5. Apply signal to the system.
6. Release the bypass switch, red LED off.
7. If the OL (overload) LED is on you must turn down the level control.
8. You may now start equalizing your system.
9. If you are not receiving enough gain out of your equalizer switch the range switch to 12dB (yellow LED will light).
10. Note: If the OL (overload) LED illuminates steadily turn down the level control until the LED is off. Note: After you have the proper settings and you do not want it to be tampered with, a security cover may be purchased at a local international dealer for your convenience.

Front Panel Controls

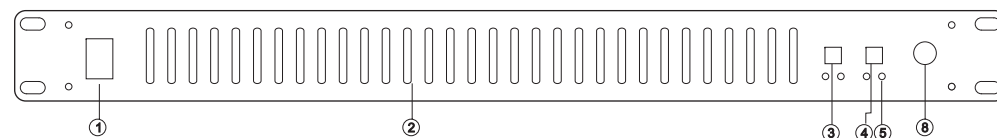
DUAL 31 BAND GRAPHIC EQUALIZER



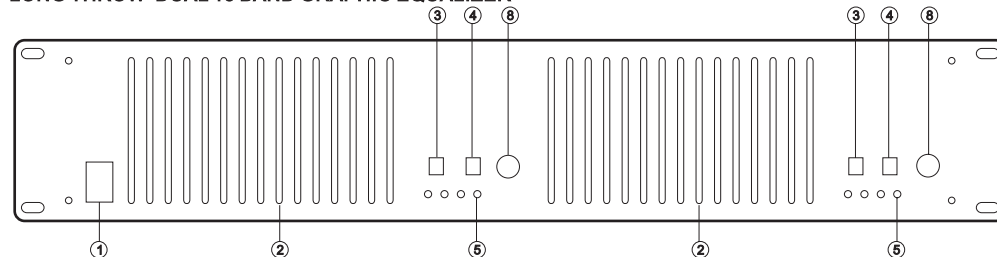
DUAL 15 BAND GRAPHIC EQUALIZER



MONO 31 BAND GRAPHIC EQUALIZER



LONG THROW DUAL 15 BAND GRAPHIC EQUALIZER



1. Power Switch

To turn the equalizer ON or OFF, press the upper or lower portion of this button.

CAUTION: Always turn on your equalizer BEFORE your power amplifiers are turned on, and always turn off your equalizer AFTER your power amplifiers have been turned off.

2. Filter Level Controls

Each of these sliders control the output level of each of the 31 (or 15) bandpass filters. Center detent position is grounded for guaranteed flat response.

3. Filter Range Switch & Indicators

The gain range of the filter sliders is switchable (as a group) from +/- 6dB to +/- 12dB for maximum boost/cut capability. At 6dB the green LED will illuminate and at 12dB the yellow LED will illuminate.

4. Bypass Switch & Indicator

When the red LED is illuminated, this indicates that the unit or channel is the bypass mode. Signal is routed directly from the input to the output without passing through any circuit (often referred to as "hard-wire bypass"). Use this switch to compare equalized and unequalized material, or to bypass the EQ section in the event of power loss or unit failure.

5. Overload Indicator

This red LED illuminates if any section of the equalizer is within 5dB of clipping. Occasional blinking of this LED is acceptable, but if it remains on more than intermittently you should turn down either the equalizer's level controls or reduce the output level of the preceding component to avoid audible distortion.

6. Low-Cut Frequency Control

For single 31 band and dual 31 band. To cut down unwanted signal, this control determines the roll-off frequency of the High-Pass Filter (HPF) in the instrument. The roll-off frequency can be adjusted from 10Hz to 250Hz by turning this knob. Because of its high roll-off slope, the HPF can be efficiently used to cut down the "HUM" noise from preceding instruments, or to prevent the low-frequency resonance while the speakers are installed in an enclosed acoustic environment.

7. High-Cut Frequency Control

Dual 31 band only, To cut down unwanted signal this control determines the roll-off frequency of the Low-Pass filter (LPF) in the instrument. The roll-off frequency can be adjusted from 3KHz to 40KHz by turning the knob. Because of its high roll-off slope, this LPF can be effectively used to cut down the high-

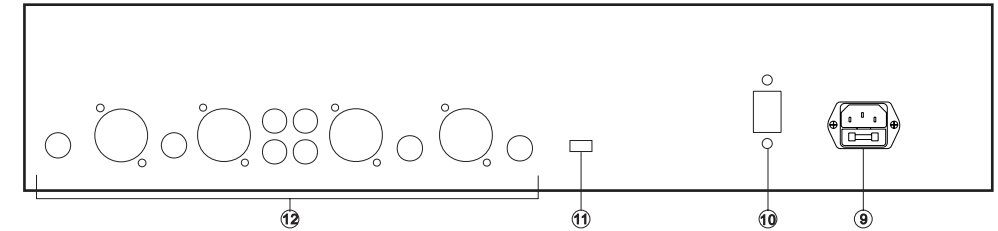
frequency noise from preceding instruments, or especially used to roll-off high frequency sound to obtain a more natural sound in acoustic situations.

8. Level Control

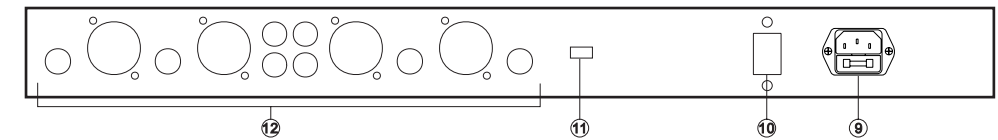
This controls the level of signal coming into the instrument. Turn this control down if the **OVERLOAD LED** illuminates steadily (meaning too strong on input signal). Unity gain can be set by turning this knob to its center detent position.

Rear Panel Connectors & Controls

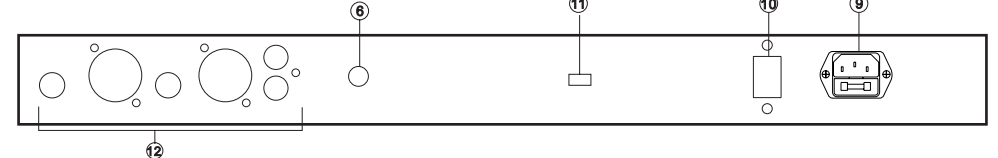
DUAL 31 BAND GRAPHIC EQUALIZER



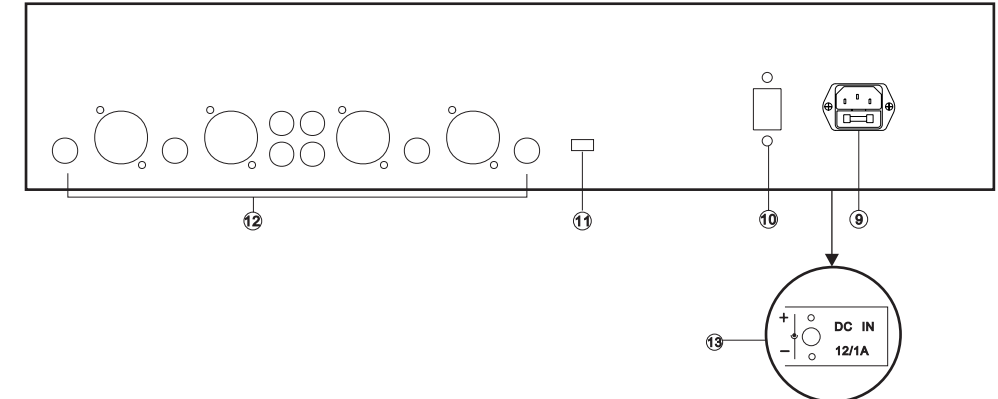
DUAL 15 BAND GRAPHIC EQUALIZER



MONO 31 BAND GRAPHIC EQUALIZER



LONG THROW DUAL 15 BAND GRAPHIC EQUALIZER



9.IEC Socket

This cord is used connect the AC power source your equalizer. CAUTION: Equipment for USA consumption includes a captive power cord with a three pin polarized plug. DO NOT REMOVE THE CENTER GROUNDING PIN.

This IEC Socket contains a AC primary fuse. This fuse should be replaced by the same type fuse when this is blown out. If they continuously blow, stop replacing fuse and refer servicing to qualified personnel. CAUTION: After checking the AC supply voltage, be sure that the correct fuse is used; 0.5 Amp for 100-120V AC as well for 220-240V AC.

10.AC Voltage Selector (only for EQ of AC power supply)

Set this slide switch to match your line voltage supply. CAUTION: To new installations and portable sound systems, or any situation in which the mains power is suspect, it is wise to confirm appropriate voltage and line polarity BEFORE connecting the instrument to power source.

11.Ground-Lift Switch

This switch is used to disconnect the signal ground from the mains and chassis earth ground. User is suggested to put the switch to LIFT position if "HUM", caused by ground-loop, can be heard at the speakers.

12.Input/Output Connectors

1/4 "TRS

The TRS (Tip Ring Sleeve) connector is balanced and wired as tip = Hi(+), Ring=Lo(-), and the Sleeve=Ground.

CAUTION: Only one of these sockets can be chosen for audio connection at the same time.

XLR

The XLR input connector is balanced and wired as Pin 2=Hi(+), Pin 3=Lo(-), Pin 1=Ground.

CAUTION: Only one of these sockets can be chosen for audio connection at the same time.

RCA Phono

The RCA Phono input is unbalanced at the tip = Hi(+) and the Sleeve = Ground.

CAUTION: Only one of these sockets can be chosen for audio connection at the same time.

13.DC SOCKET (only for EQ of DC power supply)

The DC socket is for DC 12 volt 1A. Power supply at the tip=Hi(+) and the sleeve=Ground.

FOR BALANCED CONNECTION-FOR UNBALANCED CONNECTION

Wire the connector's as follows:

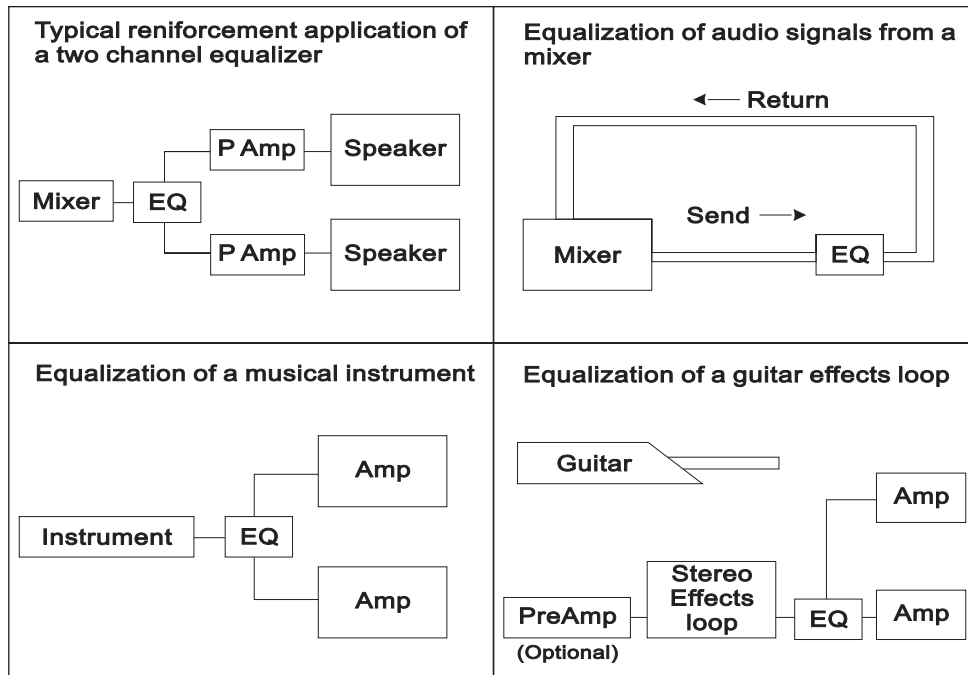
Phone Jack	Connection
tip	: high
ring	: low
sleeve	: ground

Use 1/4 inch tip-ring-sleeve or mono phone plug connectors or RCA phone jack connectors wired as follows.

Phone Jack	Connection
tip	: high
ring	: no connection
sleeve	: ground

APPLICATIONS

GE graphic equalizers may be used wherever modification of the frequency contour of a sound system is needed. A graphic equalizer is a solution to any number of sound problems or creative urges.



Specifications

Equalizer:

Bands	2x31, 1/3 Octave ISO Spacing From 20Hz to 20KHz. 1x31, 1/3 Octave ISO Spacing From 20Hz to 20KHz. 2x15, 2/3 Octave ISO Spacing From 20Hz to 16KHz.
Type	Constant Q
Accuracy	3% Center Frequency
Travel	20mm (Positive Center Detent) for 2x31, 1x31, 2x15 60mm (Positive Center Detent) for Long Throw 2x15
Range	+/- 6dB or +/- 12dB (Selectable)

Inputs:

Type	Active Balanced/Unbalanced
Connectors	3-Pin, 1/4" TRS-(Bal.). RCA. (Unbal.)
Impedance	20K. Ohms Bal; 15K Ohms Unbal
Maximum Level	+22dBm (Level Control at Center)

Outputs:

Type	Active Balanced/Unbalanced
Connectors	3-Pin, 1/4" TRS (Bal.). RCA (Unbal.)
Impedance	Typ. <150 Ohms
Maximum Level	+22dBm (2K Ohms) +18dBm (600 Ohms)

Overall Gain Range:

off to +6dB (Unbal out)
Sliders Centered
Off to +12dB (Bal out)
Sliders Centered

Rfi filters	Yes
Passive Bypass Switches	Yes
Overload LED Threshold	5 dB (Below Clipping)
Low Cut Filter	10-25Hz, 12dB/Oct
High Cut Filter	3K-40KHz, 12dB/Oct
Frequency Response	20-20KHz, +0.5dB
THD +Noise	0.01% (20Hz-40KHz+10dBu)
IM Distortion (SMPTE)	0.005%
Signal - to - Noise Ratio	-94dB(20KHz Noise Bandwidth)
Channel Separation	50dB (1KHz)
Common Mode Rejection	50:1

Line Voltage:

95-130VAC, 50/60Hz.
190-250VAC, 50Hz.
DC 12 volt, 1A.

Input AC Power:

12W
Construction: all Steel

Size:

3.5" H x 19" W x 8.5" D (2U)
(8.9cm x 48.3cm x 21.6cm) for dual 31 band &
Low Throw dual 15 band.
1.75" H x 19" W x 8.5" D (1U)
(4.45cm x 48.3cm x 21.6cm) for single 31 band & dual 15 band.
91dB.(4.1kg) for dual 31 band & Long Throw dual 15 band
4.51bs.(2.5kg) for single 31 band & dual 15 band.

Weight: