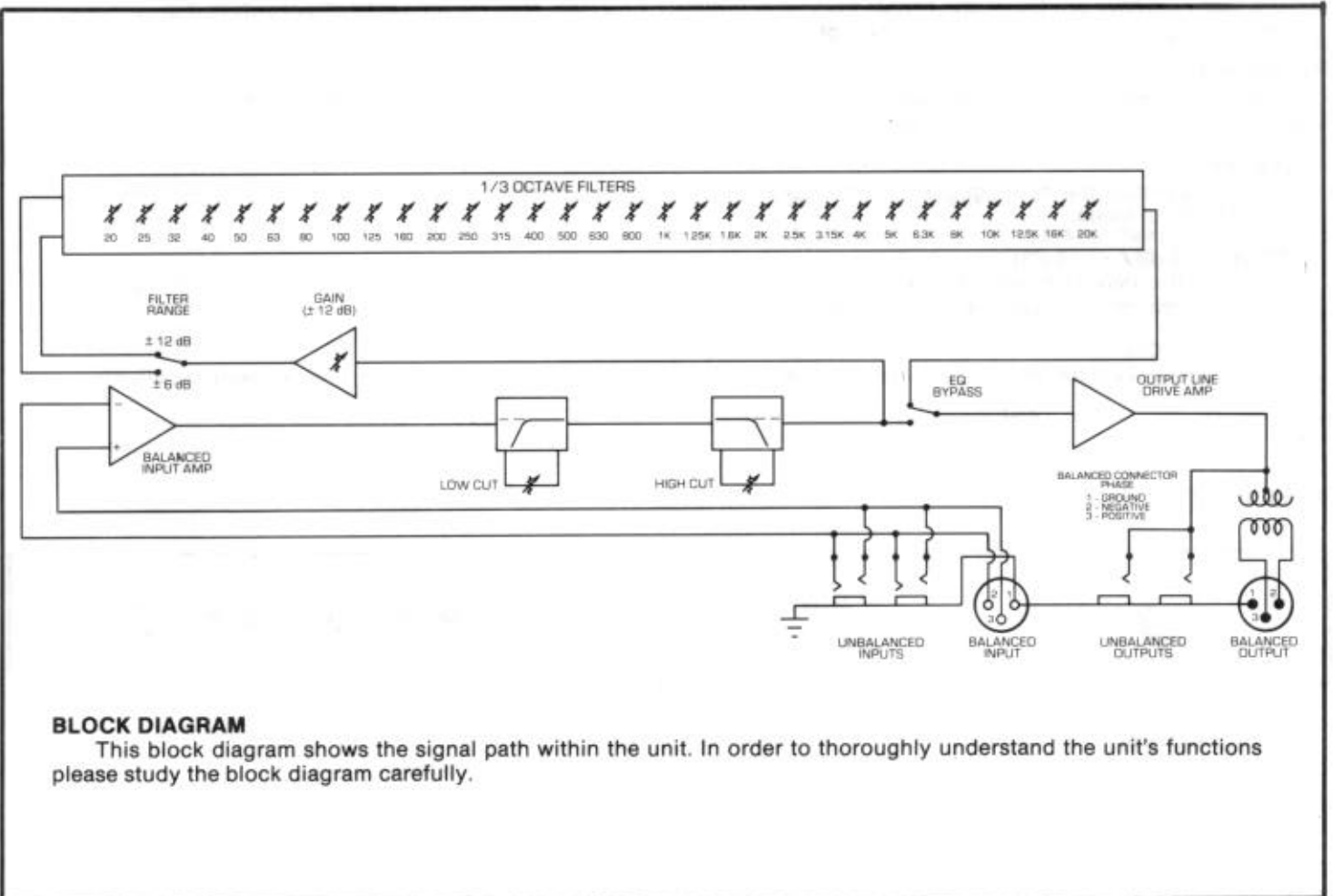
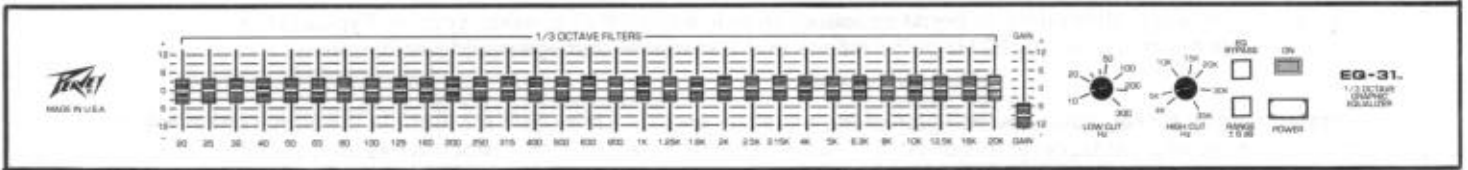




# EQ<sup>TM</sup>-31

## 1/3 OCTAVE EQUALIZER OPERATING GUIDE

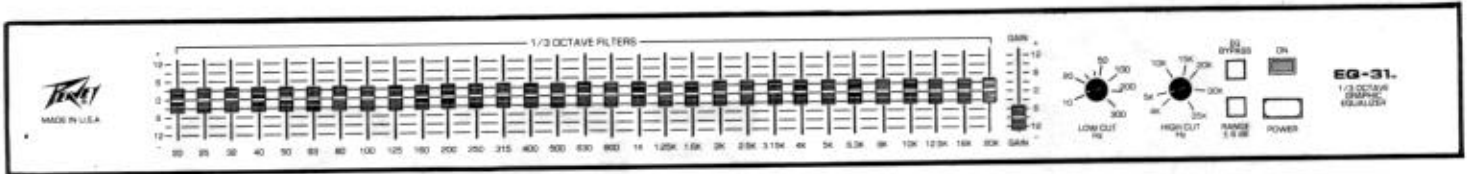
**CAUTION**  
TO PREVENT ELECTRICAL SHOCK, DO NOT EXPOSE THIS INSTRUMENT TO RAIN OR MOISTURE.  
BEFORE USING THIS INSTRUMENT, READ BACK COVER FOR FURTHER WARNINGS.



### BLOCK DIAGRAM

This block diagram shows the signal path within the unit. In order to thoroughly understand the unit's functions please study the block diagram carefully.

## FRONT PANEL



### EQUALIZER SECTION

31-bands of 1/3 octave filters with dual range capability. The filters are constant "Q" devices, located at standard ISO center frequencies. Effective equalization range is from 20 Hz to 20 kHz. Normal operation is 12 dB cut or boost (see Range switch).

### OPERATION NOTE

This equalizer is designed to provide room equalization, feedback control and system tone control. No amount of equalization will correct an acoustically bad room/mic/speaker arrangement or completely correct the response curve of a poor loudspeaker. Always begin with all sliders in the "0" position and avoid excessively cutting large segments of the audio passband, which would limit the system's dynamic range.

Exercise caution when attempting to boost equalization below cut-off of speaker system. Typical sound reinforcement enclosures are not designed for 20 Hz performance and transducer damage could result.

### GAIN

Calibrated control for regulating overall gain of the equalizer section. Unity gain throughout the signal chain may be maintained by recovering lost signal at this point. Example: Assume the equalization process has introduced a signal loss of -6dB by negative (-) adjustment of the EQ section. The gain should then be adjusted to +6 to maintain unity gain through the equalizer.

### LOW CUT

A high pass filter, continuously variable from 10 Hz to 300 Hz. Low frequency roll off is at 12 dB per octave. Adjust this control to approximate low frequency cut-off of speaker system.

### HIGH CUT

A low pass filter, continuously variable from 4 kHz to 35 kHz. High frequency roll off is at 12 dB per octave. Adjust this control slightly above high frequency system limitation.

### EQ-BYPASS

In bypass mode, the input signal is routed directly to the output and is unaffected by all front panel controls except low cut and high cut filters.

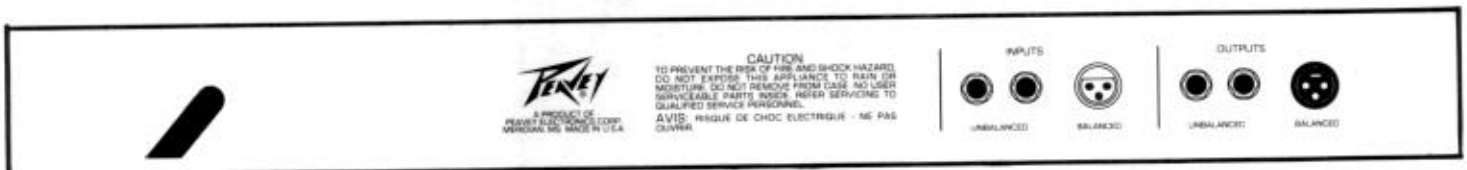
### RANGE (+/-6 dB/ +/-12 dB)

Selects the amount of cut or boost available with equalizer section. Switch position (out) provides +/-12 dB range. Switch position (in) provides +/-6 dB operation.

### POWER SWITCH

Depress the switch to the "On" position. The red pilot light (LED) will illuminate indicating power is being supplied to the unit.

## REAR PANEL



### INPUT (Balanced)

A three-pin female XLR jack is provided for electronically balanced input termination.

### INPUT (Unbalanced)

Two 1/4" ring-tip-sleeve (stereo) jacks provide balanced inputs when used with stereo (RTS) 1/4" plugs and 2-conductor shielded cables. When used with a mono 1/4" phone plug, the input is unbalanced.

## OPERATION NOTE

Using either of the two ¼" inputs with a mono phone plug unbalances the other ¼" input and the XLR input. When one of these inputs is used as a "y-out" to an unbalanced input on another piece of equipment, all the inputs become unbalanced.

## OUTPUT (Balanced)

A transformer balanced, male XLR output provides line-balancing to other pieces of audio equipment (power amps, etc.) Balanced output is recommended for rejection of hum, noise and outside interference.

## OUTPUT (Unbalanced)

Two parallel ¼" phone jacks are provided for unbalanced output termination.

## LINE CORD

### (120V products only)

For your safety, we have incorporated a 3-wire line (mains) cable with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the equipment without proper grounding facilities, suitable grounding adaptors should be used. Less noise and greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.

## EQ-31 SPECIFICATIONS

All specifications are typical unless otherwise noted.  
0dBV= 1 Volt.

All specifications are referenced to nominal output level (0dBV) unless otherwise noted.

All measurements are wideband 20 Hz to 20 kHz unless otherwise stated.

NOTE: All specs measured at 1V RMS input and unbalanced output. All sliders at mid position, all switches out unless otherwise noted.

**Frequency Response: (Balanced and Unbalanced Outputs)**  
+/-1dB 20 Hz - 20 kHz

**Distortion:**  
.003% 20 Hz - 20 kHz

**Common Mode Rejection Ratio (CMRR)**  
36db Typical

**Input Impedance:**  
Unbalanced: 20K Ohms  
Balanced: 20K Ohms (Equal impedances to ground)

**Output Impedance:**  
Unbalanced: 100 Ohms  
Balanced: 160 Ohms

**Maximum Input Level:**  
Unbalanced: +24dBV (15.8 VRMS)  
Balanced: +24dBV (15.8 VRMS)

**Maximum Output Level:**  
Unbalanced: +18dBV (8 VRMS)  
Balanced: +24dBV (15.8 VRMS)

**Nominal Input Level:**  
Unbalanced: 0dBV (1 VRMS)  
Balanced: 0dBV (1 VRMS)

### Nominal Output Level:

Unbalanced: 0dBV (1 VRMS)  
Balanced: +6dBV (2 VRMS)

**Input Headroom:**  
Nominal = 24 dB

**Output Headroom:**  
Unbalanced: 18dB  
Balanced: 18dB

**Output Noise: Unbalanced Output**  
EQ Out: -95dBv  
EQ In, all Flat: -95dBv

**Filter Bandwidth:**  
1/3 Octave

**Filter Frequencies:**  
20,25,31.6,40,50,63,80,100,125,160,200,250,316,400,500,630,800,  
1K,1.25K,1.6K,2K,2.5K,3.16K,4K,5K,6.3K,8K,10K,12.5K,16K,20K

**Filter Q:**  
4.77

**Maximum Boost & Cut Filters:**  
+/- 12 dB (+/-12 dB Position)  
+/- 6 dB (+/-6 dB Position)

**Maximum Boost & Cut Gain: (WideBand Gain)**  
+/- 12 dB (+/-12 dB Position)  
+/- 12 dB (+/-6 dB Position)

**High Cut Filter: 12 dB Per Octave**  
**Frequency:**  
Max: 35 kHz  
Min: 4 kHz

**Low Cut Filter: 12 dB Per Octave**  
**Frequency:**  
Min: 10 Hz  
Max: 400Hz