

General Description

The Rane Model PE 15 Parametric Equalizer is a single channel 5-band device of incredible versatility. It incorporates all the required features of a parametric equalizer and full-function notch filter set. Each of the five filters in the PE 15 cover a center Frequency range of four octaves, a Bandwidth of .03 to 1.5 octaves, and a boost/cut range of +15 dB to -20 dB. Bands one and five switch to allow peaking or shelving characteristics. Special attention to the design of the state-variable filters make all of these adjustments possible. All parameters are completely independent. To the user, this means any control may be operated in any order without affecting the others. This flexibility makes the PE 15 ideal for all audio contouring applications. A range that begins with the sharpest of notch filters and continues through broad-band program contouring.

Each Filter in the PE 15 may be individually Bypassed via a front panel switch, allowing the operator to audibly audition the effect of each Filter. An overall Bypass provides a “hard-wire” from the Input connector to the Output connector, completely defeating all effects of the unit. An overall Master Control Level is provided which covers a range of completely off to +20 dB. Front panel LEDs include individual Bypass and a system Overload indicator.

The rear panel provides both 3-pin as well as 1/4" Inputs and Outputs. All connectors are fully active balanced.

As a notch filter the PE 15 is unsurpassed. With bandwidths as narrow as 1/30th octave and deep 20 dB cut capability the PE 15 can remove any undesired slice of audio resonance without audibly affecting sonic quality.

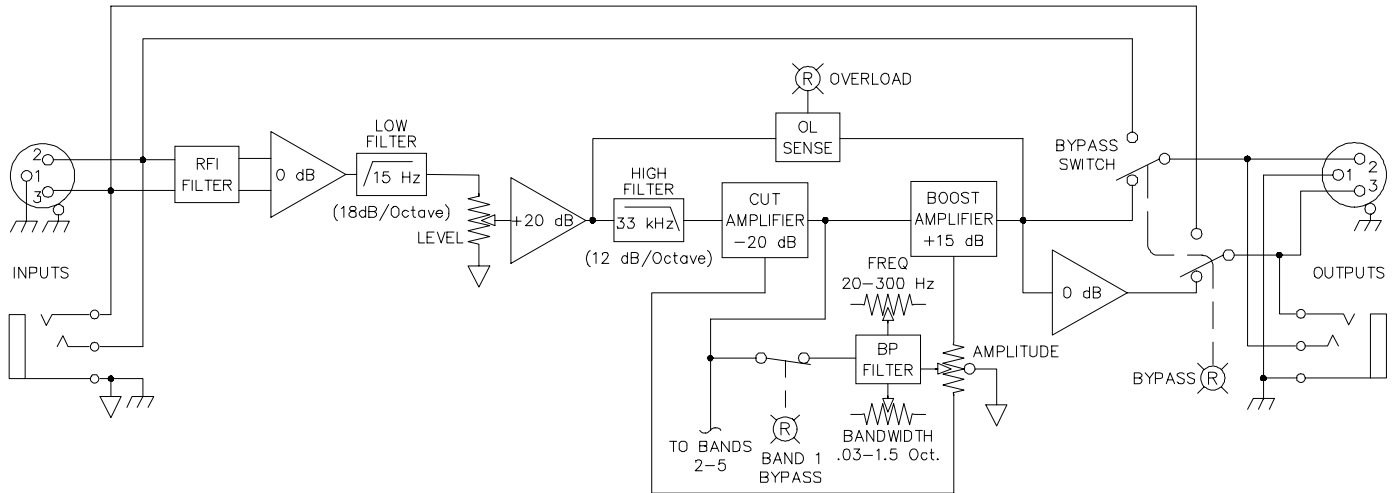
Features

- Five Parametric Bands
- Four Octave Frequency Sweep Range per Band
- .03 to 1.5 Octave Bandwidth Range
- -20 to +15 dB Filter Level Range with 0 dB Detent Controls
- Bands 1&5 Peaking or Shelving
- Individual and Overall Bypass Switches with Indicators
- Overload Indicator
- Master Level Control
- +20 dB Gain Available
- Balanced 3-Pin (XLR-type) and 1/4" TRS Connectors
- UL/CSA Remote Power Supply (120 VAC)
- CE (Low Voltage & EMC) Remote Power Supply (230 VAC)

PE 15 Features and Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
Equalizer: Bands	5			
.....Type	Full Parametric			Bands 1 & 5 Switchable to Shelving
.....Range	Boost: +15; Cut: -20	1	dB	Minimum Phase Design
.....Bandwidth	.03 to 1.5 Octaves	5	%	Continuous Sweep
.....Sweep	4 Octaves:	5	%	
	20 Hz to 300 Hz			Band 1
	60 Hz to 1 kHz			Band 2
	150 Hz to 2.5 kHz			Band 3
	450 Hz to 8 kHz			Band 4
	1 kHz to 20 kHz			Band 5
Inputs: Type	Active Balanced/Unbalanced			
.....Connectors	3-Pin & ¼" TRS			
.....Impedance	20k	1%	ohms	
.....Maximum Level	+20	1	dBu	
Outputs: Type	Active Balanced			
.....Connectors	3-Pin & ¼" TRS			
.....Impedance	200	1%	ohms	100 ohms Each Leg to Ground
.....Maximum Level	+27 > 2k ohms; +24 > 600 ohms	1	dBu	
Overall Gain Range	Off to +20	-0/+4	dB	
RFI Filters	Yes			
Passive Bypass Switch	Yes			
Overload LED Threshold	+18	1	dBu	Output or any Internal Level
Infrasonic Filter	15 Hz, 18 dB/Oct, Butterworth	3%	Hz	
Ultrasonic Filter	33 kHz, 12 dB/Oct	3%	Hz	
Frequency Response	15-33 kHz	+0/-3	dB	
THD+Noise	0.02	.01	%	+4 dBu, 20-20 kHz
IM Distortion (SMPTE)	0.009	.001	%	60 Hz/7 kHz, 4:1, +4 dBu
Signal-to-Noise Ratio				re +4 dBu, 20 kHz Noise Bandwidth
	92	2	dB	Boost/Cuts Centered, Unity Gain
	89	2	dB	Boost/Cuts Centered, Max Gain
	73	2	dB	Boost/Cuts Max, Max Gain
Unit: Agency Listing				
.....120 VAC model	Class 2 Equipment U.L. 813 Exempt CSA Exempt			National Electrical Code Class 2 Class 2
.....230 VAC model	VDE, SELV CE (EMC) CE (safety) Exempt			Safety Extra Low Voltage EMC directive 89/336/EEC Article 1 of LVD 73/23/EEC
Power Supply: Agency Listing				Class 2 Equipment
.....120 VAC model	UL listed CSA Certified			File no. E88261 File no. LR58948
.....230 VAC model	CE (EMC) CE (safety)			Meets EMC directive 89/336/EEC LV directive 73/23/EEC
Power Supply Requirement	18 VAC w/ center tap			RS 1 (see data sheet)
Maximum Current	250		mA	RMS Current from Remote Supply
Unit: Construction	All Steel			
.....Size	1.75"H x 19"W x 5.3"D (1U)			(4.4 cm x 48.3 cm x 13.5 cm)
.....Weight	5 lb			(2.3 kg)
Shipping: Size	4.25" x 20.3" x 13.75"			(11 cm x 52 cm x 35 cm)
.....Weight	9 lb			(4.1 kg)
Note: 0 dBu=0.775 Vrms				

Block Diagram



Application Information

The many and varied applications of parametric equalizers lies beyond these available short paragraphs. Instead, an overview of the unique and useful features of the PE 15 will be covered.

Five full parametric bands with two shelving options makes for an incredibly flexible unit. In addition, the PE 15 contains a steep 18 dB/octave low-cut filter located at 15 Hz, and a 12 dB/octave high-cut filter located at 33 kHz. Consequently, bandlimiting destructive infrasonic and ultrasonic frequencies is accomplished without using any of the five parametric bands.

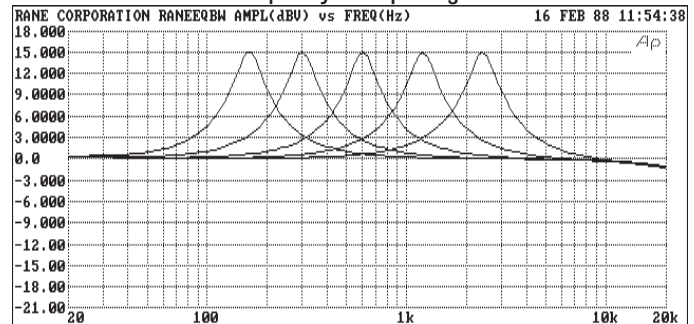
The accompanying graphs show the extreme range and versatility of the PE 15.

The **Frequency Sweep Range** graph shows the typical four octave reach (in this case, Band 3, from 150 Hz to 2.5 kHz) of the PE 15. Four octave range allows multiple band correction to the same frequencies when required. Always two bands will overlap; most frequencies can be reached by three bands; and 1 kHz is covered by four bands.

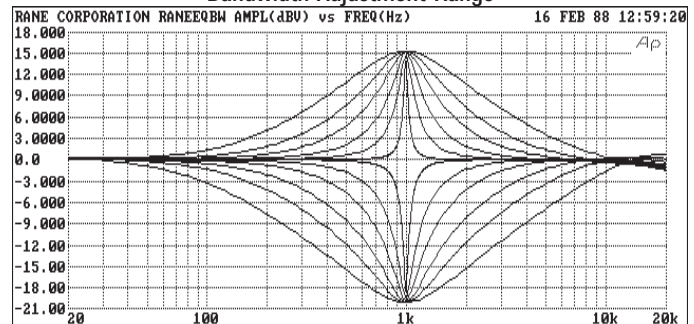
The **Bandwidth Adjustment Range** graph shows the curves achievable using the .03 to 1.5 octave wide Bandwidth adjustment. Note that .03 octaves is 1/30th of an octave. Quite narrow, we say. Combined with 20 dB cut capability, you can slice out very small pieces of the audio spectrum when required.

The **Shelving Performance** graph shows curves obtainable using the Shelf option for Bands 1 & 5. Changing to Shelf operation is simply a matter of pulling the Bandwidth control knob. It comes forward with a positive click, indicating Shelf mode is active. Once out, the Bandwidth control is inoperative since this function is not needed. The Shelf characteristic may be swept using the Frequency control, however, the silkscreened legends will not relate well to the actual corner frequency—a necessary compromise for this mode.

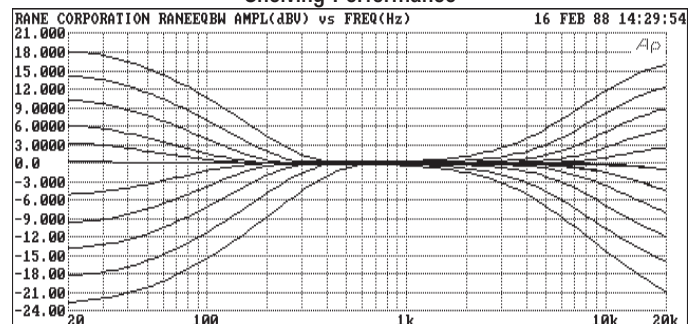
Frequency Sweep Range



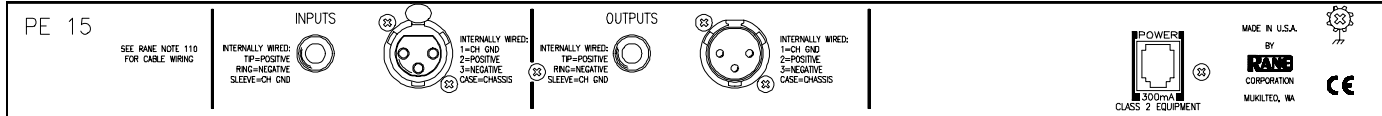
Bandwidth Adjustment Range



Shelving Performance



Rear Panel



Architectural Specifications

The parametric equalizer shall be a one (1) channel, five (5) band unit with bands 1 and 5 switchable to shelving mode, and be designed for rack-mounting requiring only one (1) rack space.

Separate bypass switches with LED indicators shall be provided for each band. Each band shall have separate controls to sweep frequency over four (4) octaves, adjust bandwidth from .03 to 1.5 octaves and set amplitude control to a maximum of +15 dB boost and -20 dB cut. An overall level control shall be included with a range from off to +20 dB of gain.

The inputs shall be active balanced/unbalanced designs terminated with 3-pin and 1/4" TRS (tip-ring-sleeve)

connectors. The outputs shall be active balanced designs terminated with 3-pin and 1/4" TRS connectors.

RFI filters shall be provided. The unit shall provide a passive Bypass feature requiring no power to operate. Infrasonic and ultrasonic filters shall be built-in. An LED shall be provided to indicate overload condition.

The unit shall be exempt from agency safety requirements and powered from a UL listed, CSA certified remote power supply (120 VAC) or CE approved (230 VAC). This external supply shall be provided with each unit. The unit shall be entirely constructed from cold-rolled steel, and mount into a standard 1U EIA rack.

The unit shall be a Rane Corporation Model PE 15 Parametric Equalizer.

Available Accessories

- SC 1.7 Security Cover