

General Description

The Rane ME Series microGraphic Equalizers consists of three models—the ME 15B, a two channel, 2/3-octave design, the ME 30B, a one channel, 1/3-octave version, and the ME 60, a two channel, two rack space, 1/3-octave model (refer to the ME 60 data sheet). The ME 15B and ME 30Bs are single rack-space units. They feature a Range switch for high slider resolution in the ± 6 dB mode, equivalent resolution to 45 mm sliders found on double rack-space models. The ± 12 dB mode provides a wide range of control over system audio.

The active filter sections feature Rane's innovative constant-Q (constant bandwidth) design. Constant-Q means the bandwidth of each individual filter is guaranteed to be narrow enough to prevent unwarranted interaction between

filters, yet wide enough to produce exactly the type of correction curve demanded by even the most unusual acoustic surroundings. This differs dramatically from conventional designs of the past, encumbered with the unfortunate characteristic of changing bandwidth when changing boost/cut amounts.

Front panel controls and indicators, aside from the sliders and the filter range switches, include an overall Level control for each Channel as well as overload indicators. The rear of the unit provides both 1/4" Tip-Ring-Sleeve and XLR 3-pin connectors for each of the Inputs and Outputs. The Inputs and Outputs are fully actively balanced. Unbalanced sources may be connected through the use of either "mono" 1/4" connectors or by tying the ring to the sleeve on TRS type plugs.

Features

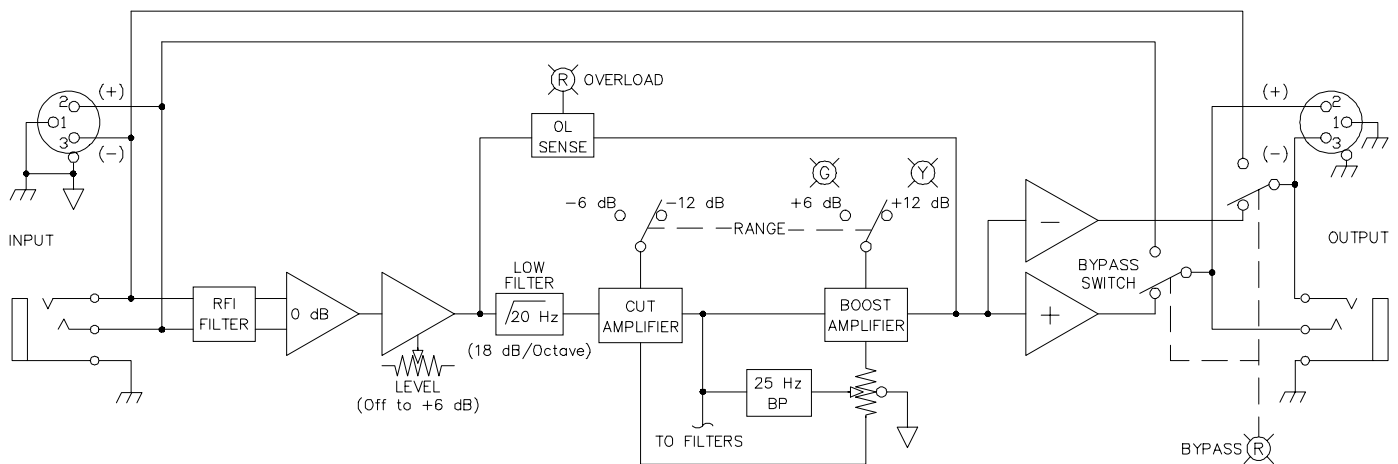
- Constant-Q Bandwidth Design
- Overall Level Control
- Passive Bypass Switch
- 20 mm Filter Slide Controls
- ± 6 dB or ± 12 dB Slider Range
- Grounded Center Detents
- Infrasonic, Ultrasonic, & RFI Filters
- Fully Balanced 3-Pin Inputs and Outputs
- 1/4" TRS Balanced/Unbalanced Inputs and Outputs
- UL Listed for USA, cUL Listed for Canada (120 VAC)
- Meets CE Requirements for EMC and Safety (230 VAC)



Features and Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
Equalizer:				
.....Bands: ME 15B	(15) 2/3-octave ISO spacing			From 25 Hz to 16 kHz
..... ME 30B	(30) 1/3-octave ISO spacing			From 25 Hz to 20 kHz
.....Type	Constant-Q			
.....Accuracy	3		%	Center frequency
.....Travel	20		mm	Positive grounded center detent
.....Range	±12 or ±6	1	dB	Switch selectable
Inputs: Type	Active balanced/unbalanced			
.....Connectors	3-pin & ¼" TRS			
.....Impedance	20k balanced; 10k unbalanced	min	ohms	
.....Maximum Level	26	1	dBu	
Outputs: Type	Active balanced/unbalanced			
.....Connectors	3-pin & ¼" TRS			
.....Impedance	200 balanced; 100 unbalanced	1%	ohms	
.....Maximum Level	+20 balanced; +15 unbalanced	1	dBu	2k ohms
	+19 balanced; +13 unbalanced	1	dBu	600 ohms
Overall Gain Range	Off to +0 (unbalanced output)	min	dB	Sliders centered
	Off to +6 (balanced output)	min	dB	Sliders centered
RFI Filters	Yes			
Passive Bypass Switches	Yes			
LED Thresholds: Overload	4	1	dB	Below clipping
Infrasonic Filter	20 Hz, 18 dB/octave, Butterworth	3%	Hz	
Ultrasonic Filter	100 kHz, 12 dB/octave	3%	Hz	
Frequency Response	15-100 kHz	+0/-3	dB	
THD+Noise	0.009	.002	%	+4 dBu, 20-20 kHz
IM Distortion (SMPTE)	0.005	.003	%	60 Hz/7 kHz, 4:1, +4 dBu
Signal-to-Noise Ratio	re +20 dBu/+4 dBu			20 kHz noise bandwidth
	107/91	2	dB	Sliders centered, unity gain, bal.
	92/76	2	dB	Full boost, unity gain, balanced
	104/88	2	dB	Full cut, unity gain, balanced
Channel Separation (ME 15B)	85	min	dB	1 kHz
Common Mode Rejection	46	1	dB	1 kHz
Maximum Power	12		W	
Line Voltage: Domestic	98-130 VAC, 50/60 Hz	2	VAC	Max input, 100k ohm load, unity
.....Export	190-250 VAC, 50 Hz	2	VAC	Max input, 100k ohm load, unity
Unit: Agency Listing				
.....120 VAC model	UL			UL 813 (file E104174)
	cUL (Canada)			C22.2 (file E104174)
.....230 VAC model	CE-EMC cert. (EN55013 & EN55020)			EMC directive 89/336/EEC
	CE-Safety certified (EN60065)			LV directive 73/23/EEC
Unit: Construction	All steel			
.....Size	1.75" H x 19" W x 5.25" D (1U)			(4.4 cm x 48.3 cm x 13.3 cm)
.....Weight	5 lb			(2.3 kg)
Shipping: Size	4.25" x 20.3" x 13.75"			(10.8 cm x 52 cm x 35 cm)
.....Weight	8 lb			(3.6 kg)
Note: 0 dBu=0.775 Vrms				

Block Diagram



Application Information

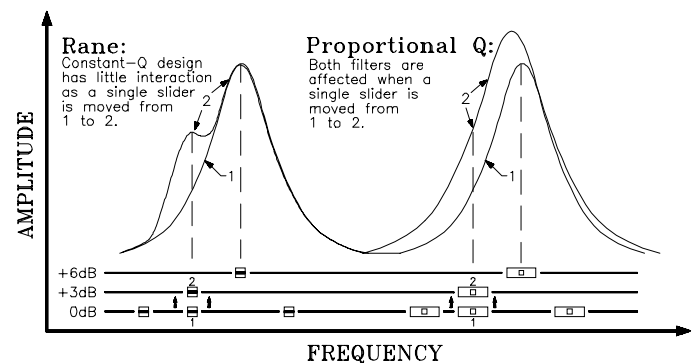
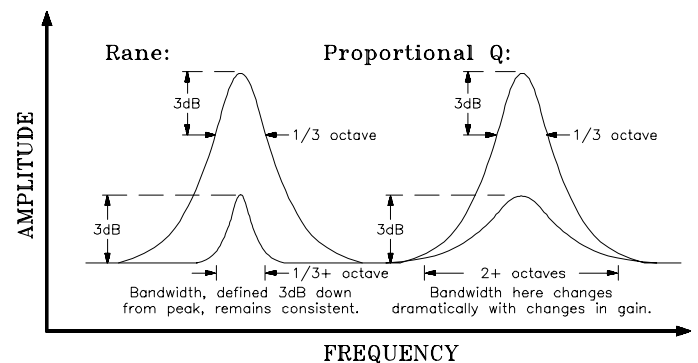
Rane's microGraphic series of single rack space graphic equalizers offers the same high quality constant-Q performance as their long throw relatives, the GE's. No compromises or trade-offs exist in selecting the microGraphics. All circuitry, components and specifications are essentially identical. Only the slider throw is different, plus you gain a Range switch to help extend the usable travel if modest boost/cut amounts are needed. In fact, the travel distance for 6 dB of boost/cut is identical to the GE 215, GE 130, or GE 60 when in the ± 6 dB mode.

These models exist for people requiring the best equalizer value possible in the smallest space allowable.

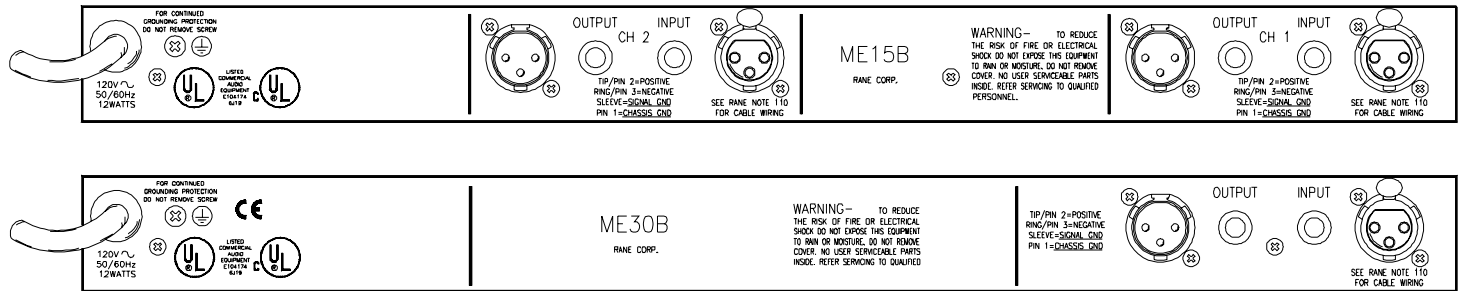
Constant-Q graphic equalizers arose from the sound professional's need for greater control with less interaction than previously possible with conventional equalizers. Truth in slider position became a requirement. The curve traced out by the slider positions on constant-Q designs indeed represents the actual changes to the frequency response. On conventional designs they do not.

You use a constant-Q graphic the same way you use a conventional graphic. You just get the desired results quicker, with far less after adjustment to the adjacent sliders. Eliminating a phenomena Rane calls "equalizing the equalizer".

The accompanying figures dramatically show the advantages of constant-Q designs. For a brief explanation of Rane's design philosophy please see the GE 130/215 data sheet; and for more technical information please consult the references on the back page.



Rear Panel



Architectural Specifications

The graphic equalizer shall be of constant-Q design to minimize interactions between adjacent bands, and contain frequency bands located on standard ISO center frequencies. Each band shall have a bandwidth of either 1/3 or 2/3-octave, as specified elsewhere. A switchable boost/cut range of 12 dB or 6 dB shall be provided. A detented and positively grounded 0 dB point shall be provided on 20 mm linear sliders with dust dams.

A rotary overall level control shall be provided with a range from off to +6 dB of gain in balanced mode.

The inputs and outputs shall be active balanced/unbalanced designs terminated with both 3-pin and 1/4" TRS (tip-ring-sleeve) 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. LEDs shall be provided to indicate overload conditions.

The unit shall be capable of operation by means of its own built-in power supply connected to 120 VAC (240 VAC where applicable) and meet CE requirements. The unit shall be UL and cUL listed. The unit shall be entirely constructed from cold-rolled steel.

The unit shall be a Rane Corporation ME Series Equalizer.

Available Accessories

- SC 1.7 Security Cover

References

1. D. Bohn, "Constant-Q Graphic Equalizers," *Rane Note 101*, (1982).
2. D. Bohn, "A New Generation of Filters," *Sound and Video Contractor*, vol. 2, pp. 36-39 (Feb. 1984).
3. T. Pennington, "Constant-Q," *Studio Sound*, vol.27, pp. 82-85 (Oct. 1985).
4. D. Bohn, "Constant-Q Graphic Equalizers," *J. Audio Eng. Soc.*, vol. 34, pp. 611-626 (September 1986).
5. D. Bohn, "Exposing Equalizer Mythology," *Rane Note 115*, (1986).
6. D. Bohn, "Operator Adjustable Equalizers: An Overview," *Rane Note 122*, (1990).