



General Description

The Rane ME 15S microGraphic Equalizer is a two-channel, $\frac{2}{3}$ -octave design with 20 mm sliders in a single rack space unit. It features 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 $\frac{1}{4}$ " Tip-Ring-Sleeve and XLR 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" $\frac{1}{4}$ " connectors or by tying the ring to the sleeve on TRS type plugs.

Features

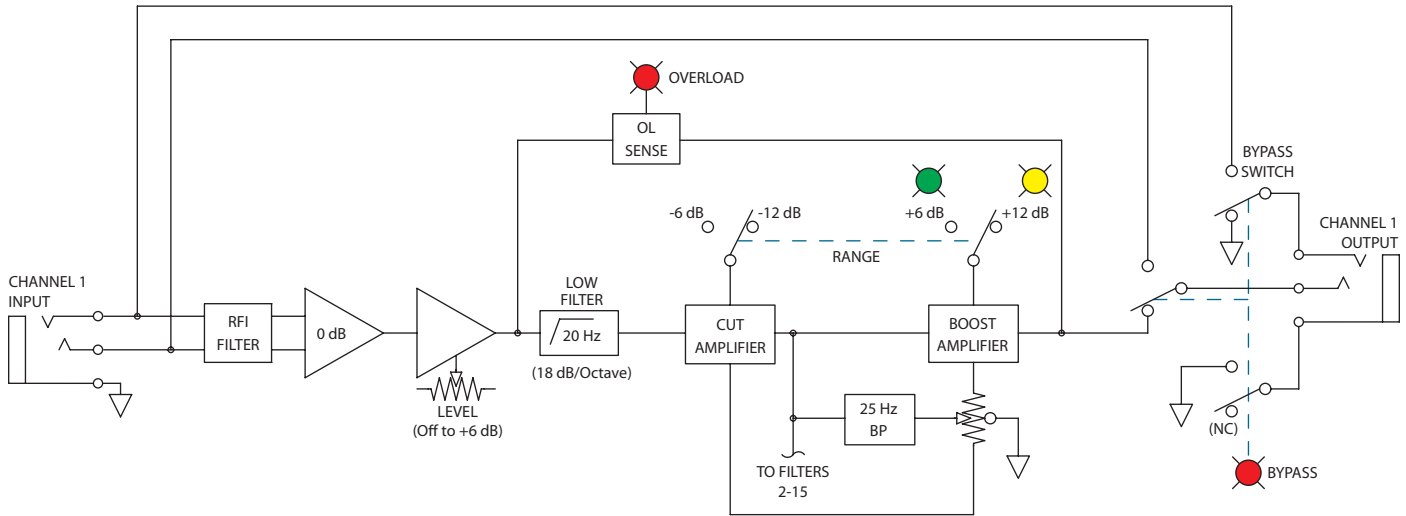
- Constant-Q Bandwidth Design
- Overall Level Control
- 20 mm Filter Slide Controls
- ± 6 dB or ± 12 dB Slider Range
- Passive Bypass Switch
- Grounded Center Detents at 0 dB
- Infrasonic, Ultrasonic, & RFI Filters
- Fully Balanced XLR Inputs and Outputs
- $\frac{1}{4}$ " TRS Balanced/Unbalanced Inputs and Outputs
- Universal internal switching power supply (100-240 VAC)



Features and Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
Equalizer:				
.....Bands	(15) 2/3-octave ISO spacing			From 25 Hz to 16 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	XLR & 1/4" TRS			
.....Impedance	20k balanced; 10k unbalanced	min	Ω	
.....Maximum Level	20	1	dBu	
Outputs: Type	Active balanced/unbalanced			
.....Connectors	XLR & 1/4" TRS			
.....Impedance	400 balanced 200 unbalanced	1%	Ω	
.....Maximum Level	+20 balanced +15 unbalanced	1	dBu	2 kΩ
	+19 balanced +13 unbalanced	1	dBu	600 Ω
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	
Frequency Response	20-100 kHz	+0/-3	dB	
THD+Noise	0.011	max	%	+4 dBu, 20-20 kHz, 20k BW
IM Distortion (SMPTE)	0.01	max	%	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, balanced
	92 76	2	dB	Full boost, unity gain, balanced
	104 88	2	dB	Full cut, unity gain, balanced
Channel Separation	85	min	dB	1 kHz
Common Mode Rejection	40	1	dB	1 kHz
Maximum Power	7		W	
Universal Line Voltage	100-240 VAC, 50/60 Hz		VAC	7W
Unit: Agency Listing				UL/cUL/CE
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)
<i>Note: 0 dBu=0.775 Vrms</i>				

Block Diagram
(both channels identical)

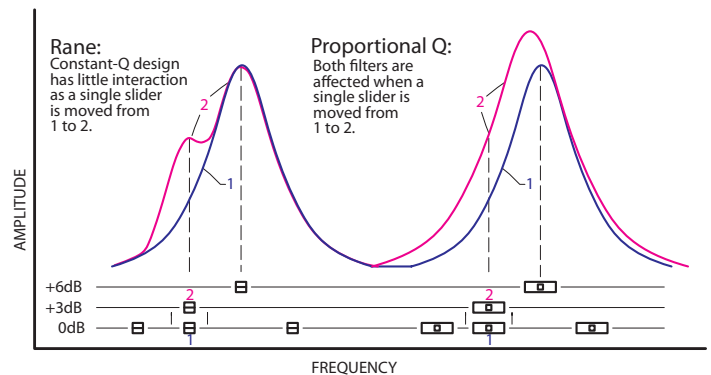
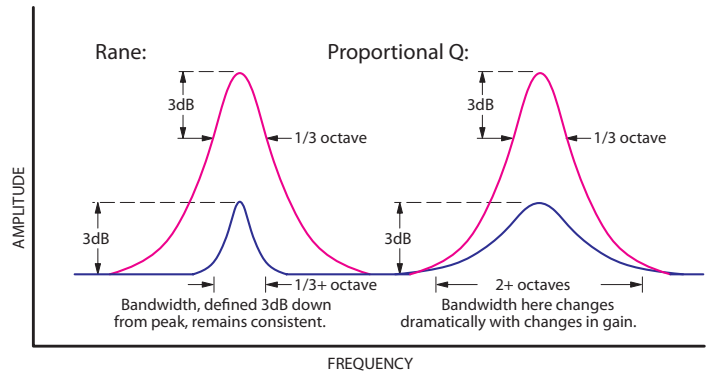


Application Information

The Rane ME Series microGraphic Equalizers exist for people requiring the best equalizer value possible in the smallest space allowable. These consist of three models—the ME 15S, a two channel, $\frac{2}{3}$ -octave design, the ME 30S, a one channel, $\frac{1}{3}$ -octave version, and the ME 60S, a two rack space, $\frac{1}{3}$ -octave model (refer to the ME 30S and ME 60S data sheets).

Constant-Q graphic equalizers arose from the sound professional's need for greater control with less interaction than previously possible with conventional equalizers. 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.

The accompanying figures dramatically show the advantages of constant-Q designs. For more technical information, consult the references on the next page. Most are available at www.rane.com/library.html.



ME 15S

microGRAPHIC EQUALIZER



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 $\frac{2}{3}$ -octave. 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 XLR and $\frac{1}{4}$ " 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 universal power supply operating at 100-240 VAC 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 15S Equalizer.

Available Accessories

- SC 1.7 Security Cover

References

1. D. Bohn, "Constant-Q Graphic Equalizers," *RaneNote*, (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," *RaneNote*, (1986).
6. D. Bohn, "Operator Adjustable Equalizers: An Overview," *RaneNote*, (1990).