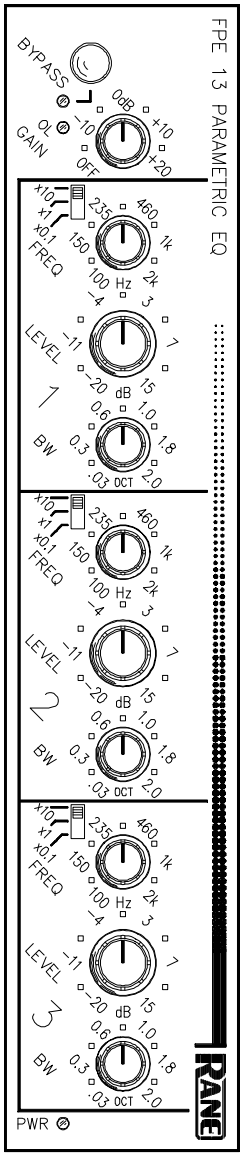
FPE 13 Parametric Equalizer



General Description

This unit is a three-band, modular version of Rane's famous five band parametrics. This Flex version actually expands the features of the larger units while maintaining or exceeding the quality and performance of its predecessors.

Each of the three filters cover the entire audio spectrum thanks to the three position Frequency Multiplier switches adjacent to each Frequency Sweep control. In addition, each filter can be adjusted over an amplitude range of -20 to +15dB with a grounded detent at 0dB. The Bandwidth of each filter is continuously variable between .03 and 2 octaves.

As is true with all Rane equalizers, each parameter of every filter is completely independent. Moving any control will not effect the setting of any other. This is of great benefit to the user due to the cryptic nature of a parametric equalizer. Without the visual feedback afforded by the more common graphic equalizer, it is especially important that the various parameters of the filters do not move around randomly as the controls are adjusted.

The rear panel of the FPE 13 features balanced 3-pin and #6 terminal strip Input and Output connectors. Additional ¼" TRS Input and Output connectors also serve as expand or patch points. These ¼" connectors allow adding as many FPE 13s as necessary to achieve an unlimited number of filters in one audio channel.

An insert PATCH jack (tip input, ring output) allows the FPE 13 to be connected to a standard tip-send, ring-return mixer insert jack using a single standard ¼" TRS cable.

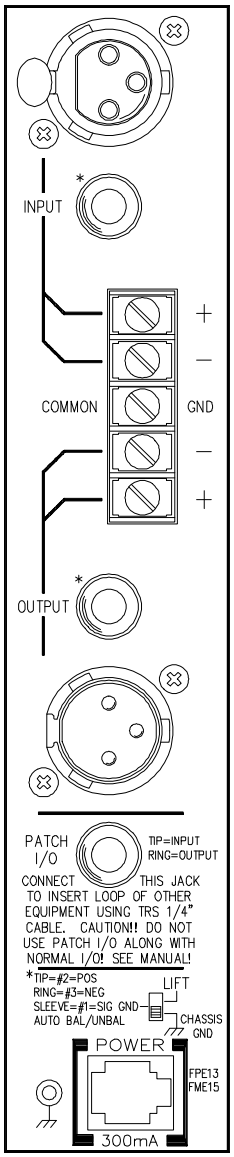
Power is supplied to the FPE 13 through its 6-pin modular connector. This power may be from either a Model RS 1 single power supply included with each FPE 13, or a Rane FRS 8, RAP 10 or VC 18 Remote Power Supply.

Features

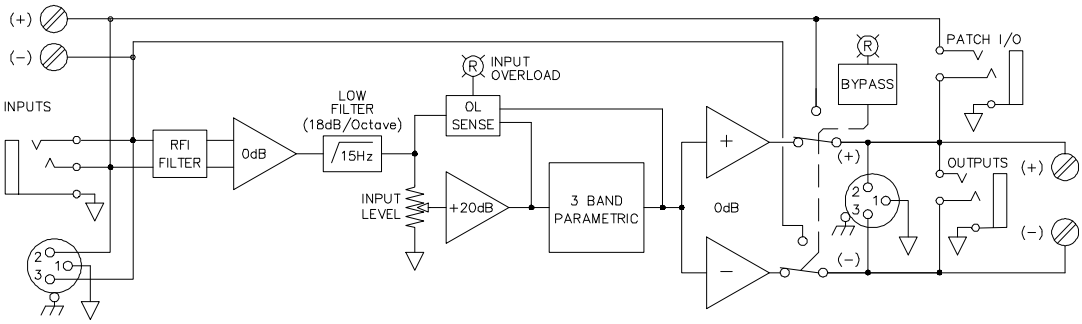
- **3 SEPARATE 10-20kHz FILTERS**
- **+15/-20dB BOOST-CUT RANGES**
- **OVERALL GAIN RANGE OFF TO +20dB**
- **BYPASS SWITCH WITH LED**
- **1/30 TO 2 OCT. BANDWIDTH RANGE**
- **3-PIN IN AND OUT CONNECTORS**
- **EXPAND INPUT AND OUTPUT**
- **INSERT PATCH JACK**
- **LOW FILTER 15Hz 18dB/OCT**
- **OVERLOAD INDICATOR**
- **FULLY BALANCED IN/OUT**
- **EQ PATENT 4,891,841**

Parameter	Specification	Limit	Units	Conditions/Comments
Equalizer: Bands	3			Full Parametric
.....Range	Boost: +15; Cut: -20	1	dB	Minimum Phase Design
.....Bandwidth	.03 to 2.0 Octaves	5	%	Continuously Variable
.....Sweep	4+ Octaves:	5	%	
	10Hz to 200Hz			Frequency Switch: x0.1
	100Hz to 2kHz			Frequency Switch: x1.0
	1kHz to 20kHz			Frequency Switch: x10
Overall Gain Range	Off to +20	-0/+4	dB	
Passive Bypass Switch	Yes			LED Indicator
Low Filter	15Hz, 18dB/Oct, Butterworth	3%	Hz	Internally Defeatable
Signal-to-Noise Ratio	re +20dBu/+4dBu			20kHz Noise Bandwidth
	108/92	2	dB	Boost/Cuts Centered, Unity Gain
	101/85	2	dB	Boost/Cuts Centered, Max Gain
	91/75	2	dB	Boost/Cuts Max, Max Gain
Maximum Current Demand	300		mA	RMS Current From Remote Supply

Rear Panel



Block Diagram



Application Information

The FPE 13 Parametric Equalizer was designed to be as flexible as possible given its small size.

The FPE 13 includes a 15Hz 18dB/octave low filter to band-limit destructive and power robbing infrasonic frequencies. In the event this filter is not required, it may be internally bypassed with a jumper option on the PCB. The FPE 13 also includes a passive front panel Bypass switch requiring no power to operate. This can help you when system troubleshooting or when comparing the input signal with the equalized signal.

All three bands can sweep the same frequency range which spans from 10Hz to 20kHz. Note that the span of each of the Frequency controls is one decade plus an octave for each of its three settings. Since the audio spectrum is about three decades wide, this feature allows each of the three bands to occupy its own decade of the audible spectrum.The overlapping design insures that there will be no blind spots in the audio range that can't be reached. This is especially important when you are sweeping the band to null out certain frequencies.

The Bandwidth adjustment range is our widest ever, ranging from .03 to 2 octaves wide. One of the benefits of the 2 octave bandwidth is that you can emulate a bass, treble and midrange tone control. This allows subtle changes to the spectral balance.

Of course, at or near .03 octaves of bandwidth you can spot feedback sensitive frequencies and attenuate them by up to 20dB. For notching applications, it is useful to note that in the .03 octave setting the width of the notch at the baseline is less than 1/6 octave. So you can place a 20dB deep notch anywhere in the spectrum and affect surrounding frequencies by less than 1/6 octave.