

# Mono Audio Equalizer

Professional Audio Processing Module



## 1. Product Overview



The mono audio equalizer allows precise control over low, mid, and high frequency bands. It supports multiple audio inputs over microphone or instrument and delivers clear, low-distortion output. Designed for professional audio applications.

## 2. Key Features

- Mono audio processing
- High SNR (>80 dB)
- Wide frequency range: 20 Hz – 20 kHz
- Buffered inputs and low-impedance output
- Compact PCB design with standard mounting points

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## 3. I/O Specification

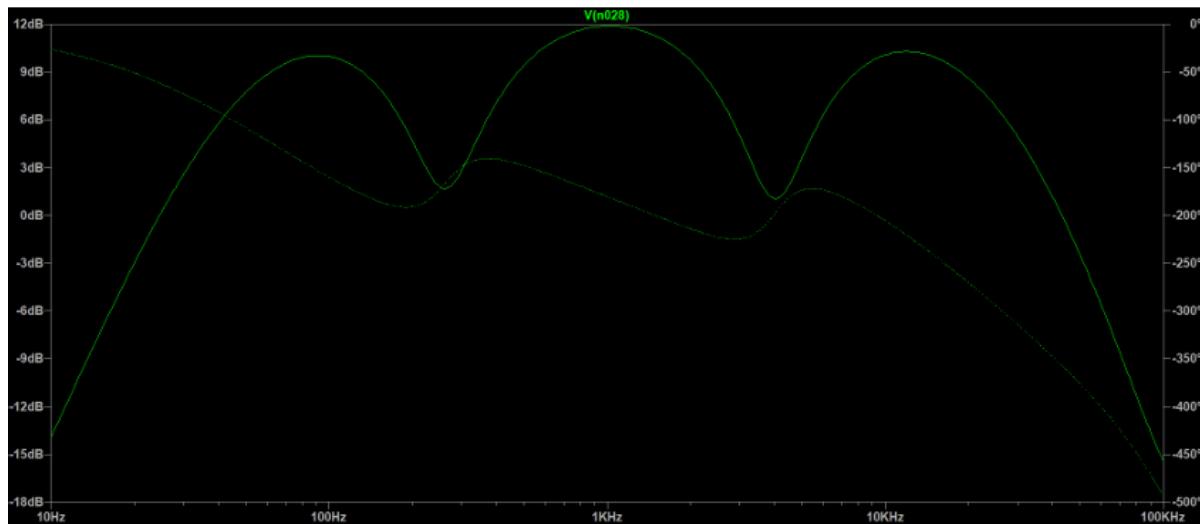


Figure 1: Equalizer Frequency response.

I/O Name	Mode	Unit	Specification		
			Min	Typ	Max
Input 1	Mic	mV	2	6	10
	Instrument	mV	100	150	200
Input 2	Mic	mV	2	6	10
	Instrument	mV	100	150	200
Input 3	Mic	mV	2	6	10
	Instrument	mV	100	150	200
Output	-	Vpp	0	1	2
Power Supply	Voltage	V	216	230	244
	Current	mA	50	65	100
Output Power	-	W	0.1	0.5	1

Table 1: mono audio I/O specifications

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## 4. Device Specification

Parameter	Unit	Rating		
		Min	Typ	Max
Supply Voltage	V	216	230	244
Supply Current	A	—	1	1.5
Input Impedance	kΩ	3	3.5	5
Output Impedance	Ω	—	8	—
SNR	dB	80	85	—
Frequency Range	Hz	50	10000	20000

Table 2: Device electrical specifications.

## 5. Control Specification

Control Parameter	Unit	Range		
		Min	Typ	Max
Low Band (50–250 Hz) Gain	dB	-12	0	+12
Mid Band (250 Hz – 4 kHz) Gain	dB	-12	0	+12
High Band 4–20 kHz) Gain	dB	-12	0	+12

Table 3: Control ranges for each frequency band.

## 6. Enclosure & Interface



Figure 2: Device dimensions

- **material :** Polylactic Acid (PLA)
- **wall thickness :** 3 mm (high strength)

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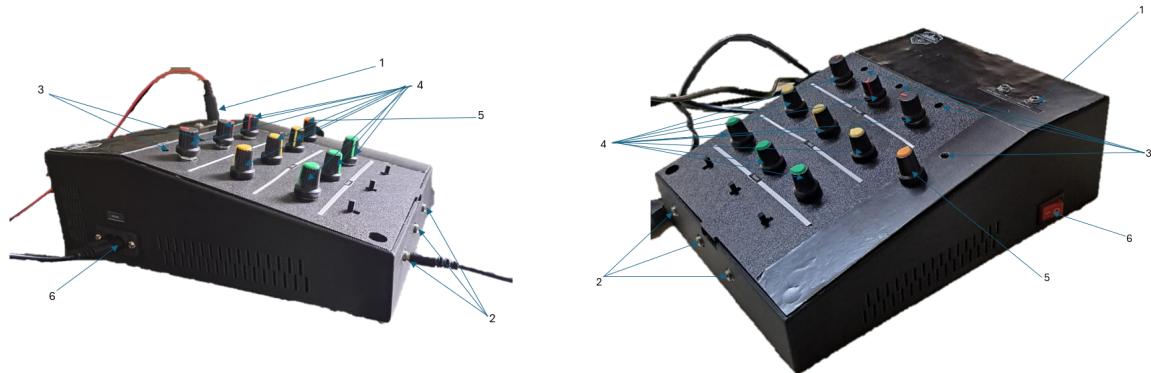


Figure 3: enclosure

- 1. AUX Out (3.5mm jack)
- 2. AUX In (3.5mm jack)
- 3. LED Displays
- 4. Individual Gain Controllers
- 5. Volume Controller
- 6. Power

## 7. Block Diagram

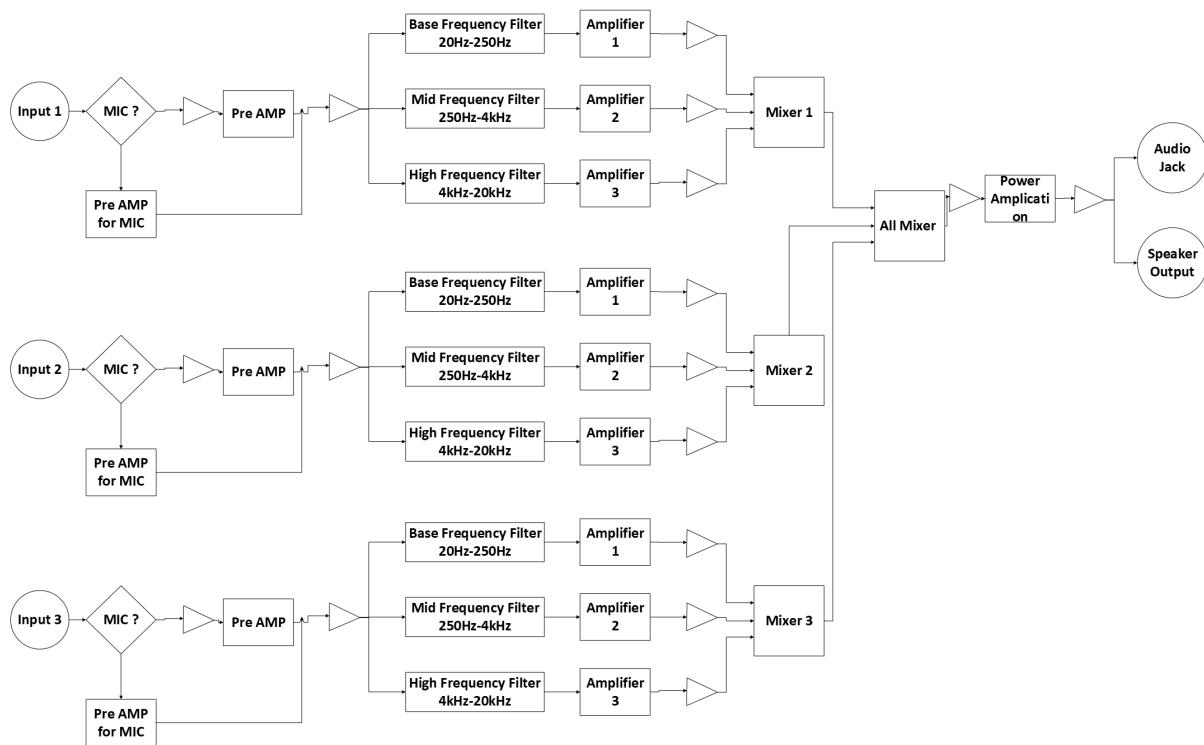


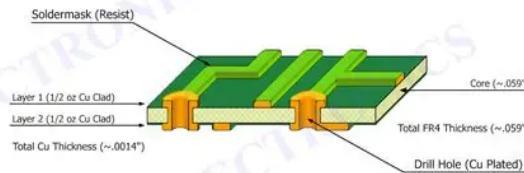
Figure 4: System Architecture

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## 8. PCB Schematics



**Two Layer**  
Stack Height (thickness) ~0.061"  
+ Cu plating (post drill) ~0.002"  
=====  
= Overall Thickness ~0.063"

Figure 5: PCB Layout

### 8.1 Power Supply Section

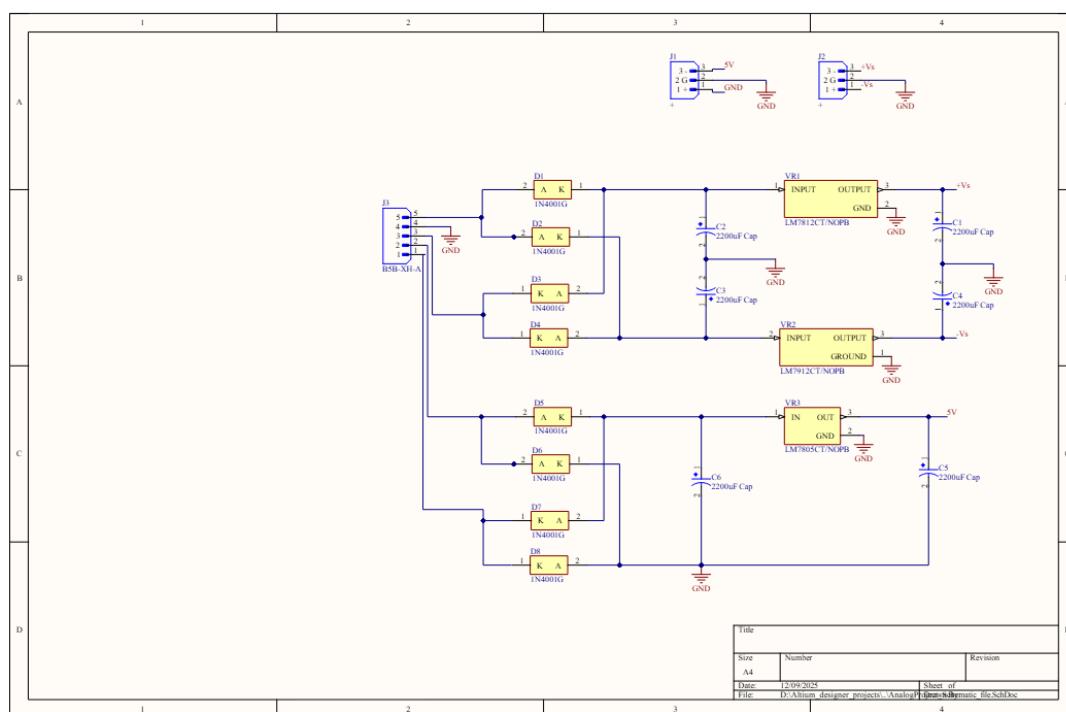


Figure 6: Power supply schematic

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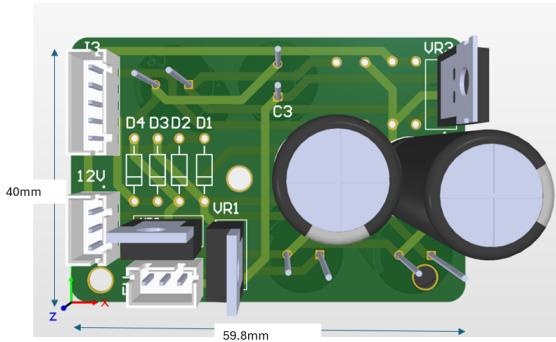


Figure 7: Power supply PCB

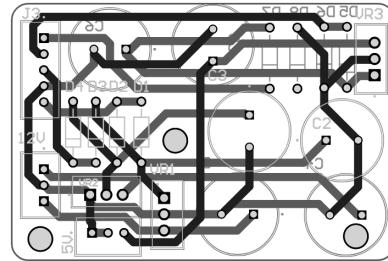


Figure 8: Power supply traces

## 8.2 Equalizer Section

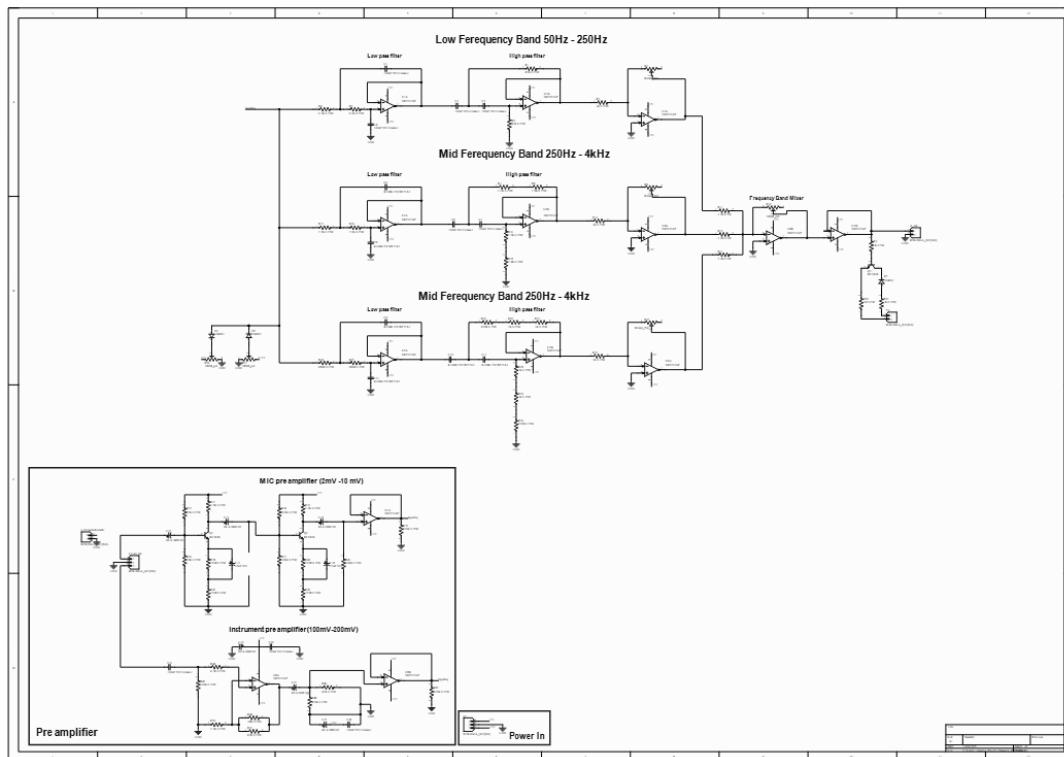


Figure 9: Equalizer schematic

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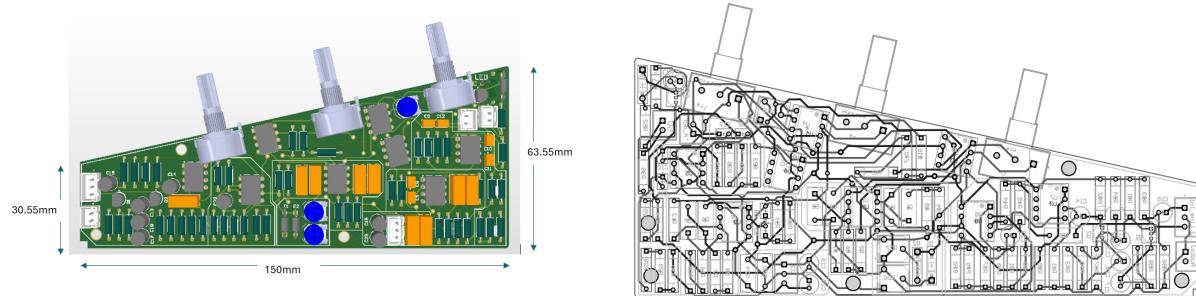


Figure 10: Equalizer PCB

Figure 11: Equalizer traces

## 8.3 Mixer Section & Power Amplifier Section

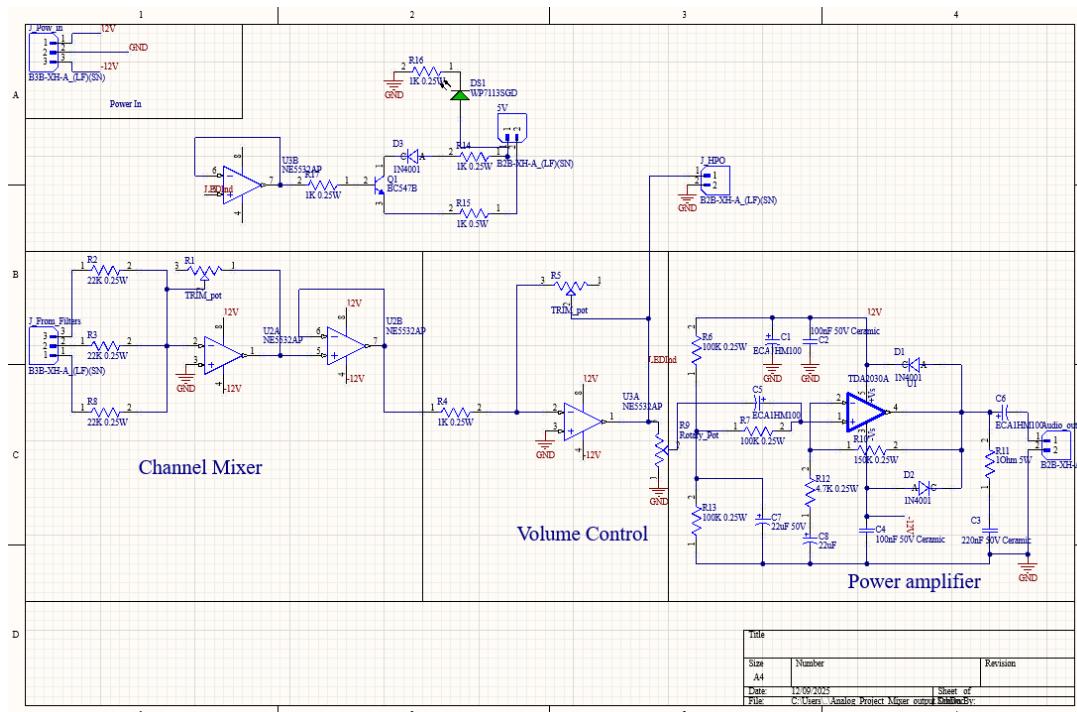


Figure 12: Mixer schematic

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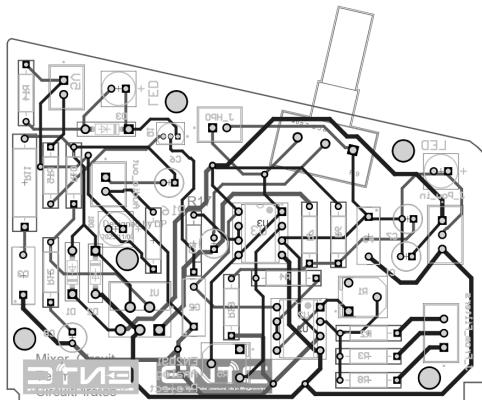


Figure 13: Mixer traces

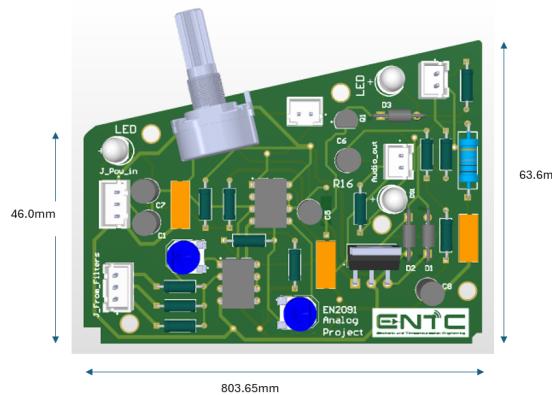


Figure 14: Mixer output PCB