

Difference Amp Board

Rev. 1

1 Overview

The Coded Devices Difference Amp Board is an implementation of a classic difference amplifier circuit followed by an adjustable gain stage. Difference amplifiers are key building blocks in high-fidelity analog systems, where they are used to reject common-mode noise and minimize distortion coupled into sensitive signals. By amplifying only the voltage difference between two inputs, common-mode disturbances are largely canceled, resulting in a clean output signal.

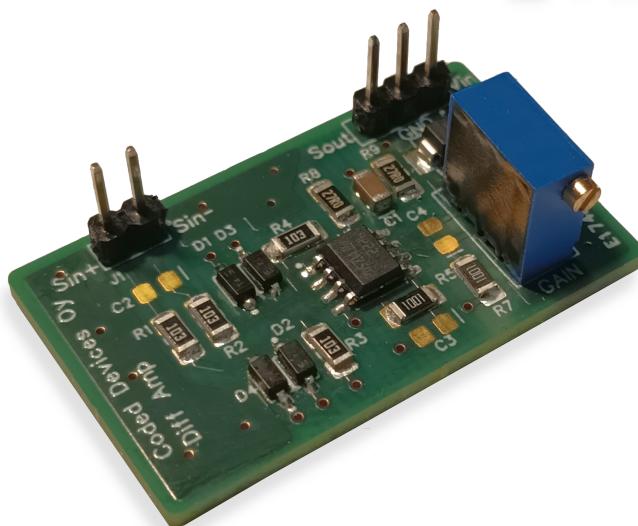


Figure 1: Example of an assembled Difference Amp board.

2 Product Scope

This product is board only. We have released an example parts list on our website (www.codeddevs.com) to help you getting started. If you have special requests or need a ready assembled board, contact Coded Devices.

3 Key Features

- Classic difference amplifier topology
- Separate adjustable gain stage
- Footprints for optional input and feedback filtering
- Footprints for optional input protection diodes

- Single-supply operation
- Four-Layer PCB optimized for low noise
- Lead-free materials, RoHS compliant.

4 PCB Structure and Layout

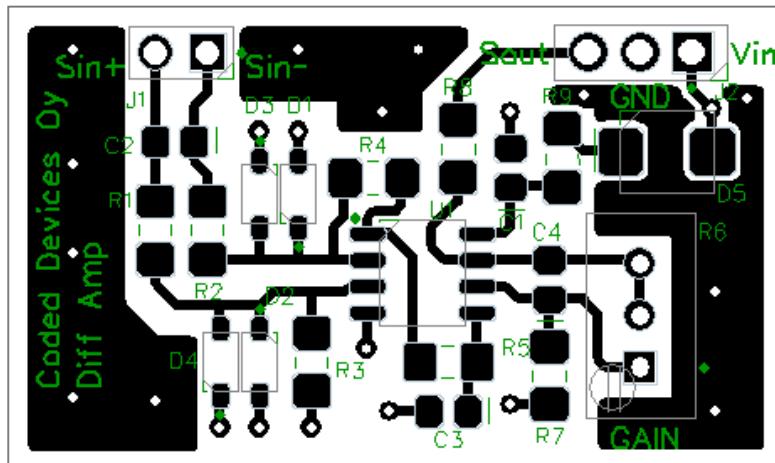


Figure 2: The top layer with print.

The board uses a four-layer PCB stack-up:

- Top layer: Signal routing
- Layer 2: Solid ground plane (GND)
- Layer 3: Power distribution (Vin)
- Layer 4: Solid ground plane (GND)

Signal routing is kept on the top layer for clarity and ease of inspection. Continuous ground planes and a dedicated power layer are used to reduce impedance and limit noise coupling into sensitive analog nodes.

PCB material is FR-4 with lead-free finish and it is RoHS compliant.

PCB size: width = 37.5 mm, height = 22.5 mm.

5 Supply Voltage Ratings

The maximum allowable supply voltage is limited by the voltage ratings of the individual components used on the board.

Recommended operating supply voltage: +12 VDC (referenced to GND). The board has been designed and tested for operation at +12 VDC. Operation at

higher supply voltages (for example, +24 VDC) may be possible with suitable component selection; however, such operation has not been tested or validated and is therefore not recommended.

Applying supply voltages beyond the recommended operating range may result in degraded performance or permanent damage.

6 Schematics

The applied schematic diagram is presented here in separate images for three functional parts.

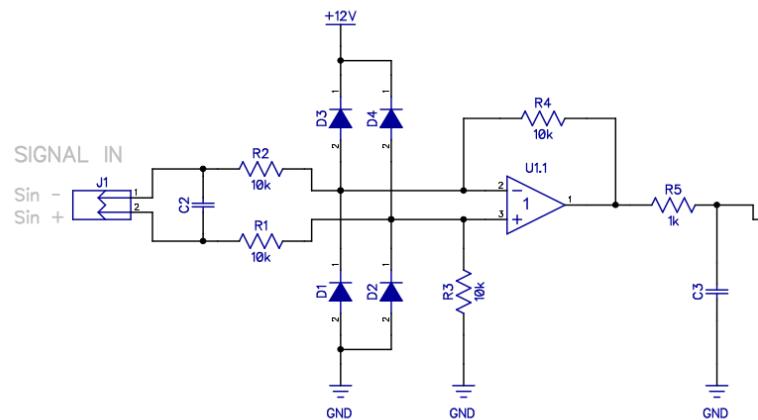


Figure 3: Difference stage with example component values.

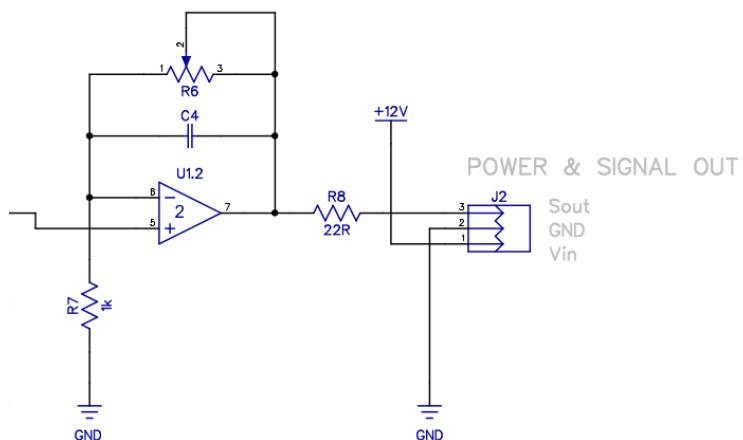


Figure 4: Gain stage with example component values.

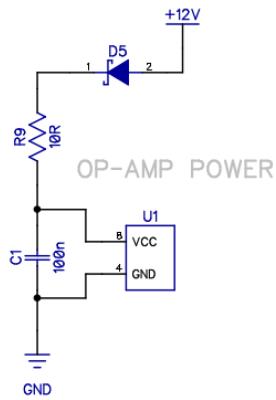


Figure 5: Power input with example component values.

7 Compliance and Disclaimer

This product is intended for evaluation, development, and integration by qualified personnel. It is not designed for use in life-critical or safety-critical systems.

This datasheet describes product behavior for Board Revision 1. Specifications are subject to change without notice.