



Introduction

The purpose of this project is to demonstrate basic analog design, circuit capture, and layout skills. You will be required to design a simple analog circuit using CadSoft Eagle for the schematic capture and board layout. We will supply a small library of suggested parts.

Once finished, please send the Eagle schematic and layout files *.sch* and *.brd*, respectively, along with a resume to *info@erdosmiller.com*. Please be sure to include a short text file describing your design decisions.

Design Goals

The goal of this project is to design a strain gauge amplifier. A single 350 ohm strain gauge is the sensing element. The circuit will be supplied with $6V - 12V$ and output an analog signal between $0V - 5V$. The output gain (positive only) should be adjustable between $1 - 1000$. The output offset should be adjustable using trim pots available in the standard Eagle libraries.

The suggested ICs for this project are the Texas Instruments *INA333* instrumentation amplifier, the *LM2936* voltage regulator, and the *REF3325* voltage reference. An Eagle library containing these parts is supplied. You may use any other parts supplied with the standard version of Eagle. If you prefer to use other parts which are not included, please submit the libraries along with the schematic and layout files.

Required Files

EagleCAD is a schematic capture and board layout package supplied by CadSoft. The free version is well suited to this task and can be downloaded from

<http://www.cadsoftusa.com/downloads/>

INA333 Instrumentation Amplifier This is a low-power, precision instrumentation amplifier offering excellent accuracy. The versatile 3-op amp design, small size, and low power make it ideal for a wide range of portable applications. The product website is

<http://focus.ti.com/docs/prod/folders/print/ina333.html>

REF3325 Voltage Reference This is a low-power, precision, low-dropout voltage reference family available in the tiny SC70-3 and SOT23-3 packages. The product website is

<http://focus.ti.com/docs/prod/folders/print/ref3325.html>

LM 2936 Voltage Regulator This is a ultra-low quiescent current regulator features low dropout voltage and low current in the standby mode. The product website is

<http://www.national.com/pf/LM/LM2936.html>

Eagle Parts Library This library contains the suggested parts for use in this design can be downloaded from the link at

<http://www.erdosmiller.com/jobs/>