Developer Guide - Two Channel Linear Power Supply and Android

This developer guide is intended to serve as a reference for each block shown in the block diagram, separated by blocks worked on by each group member, respectively.

System Overview

The two channel linear power supply has a range of 2-14V, with an acceptable deviation of ±0.5%. It steps down from 120V AC, using a transformer, full-bridge rectifier, and voltage regulators, and is compatible with any wall outlet. A variable resistance is controlled by the button blocks, allowing the channels on the power supply to be manipulated by a pair of buttons that will increase and decrease the voltage by steps of 0.25V, respectively. A schematic of the system can be seen below.

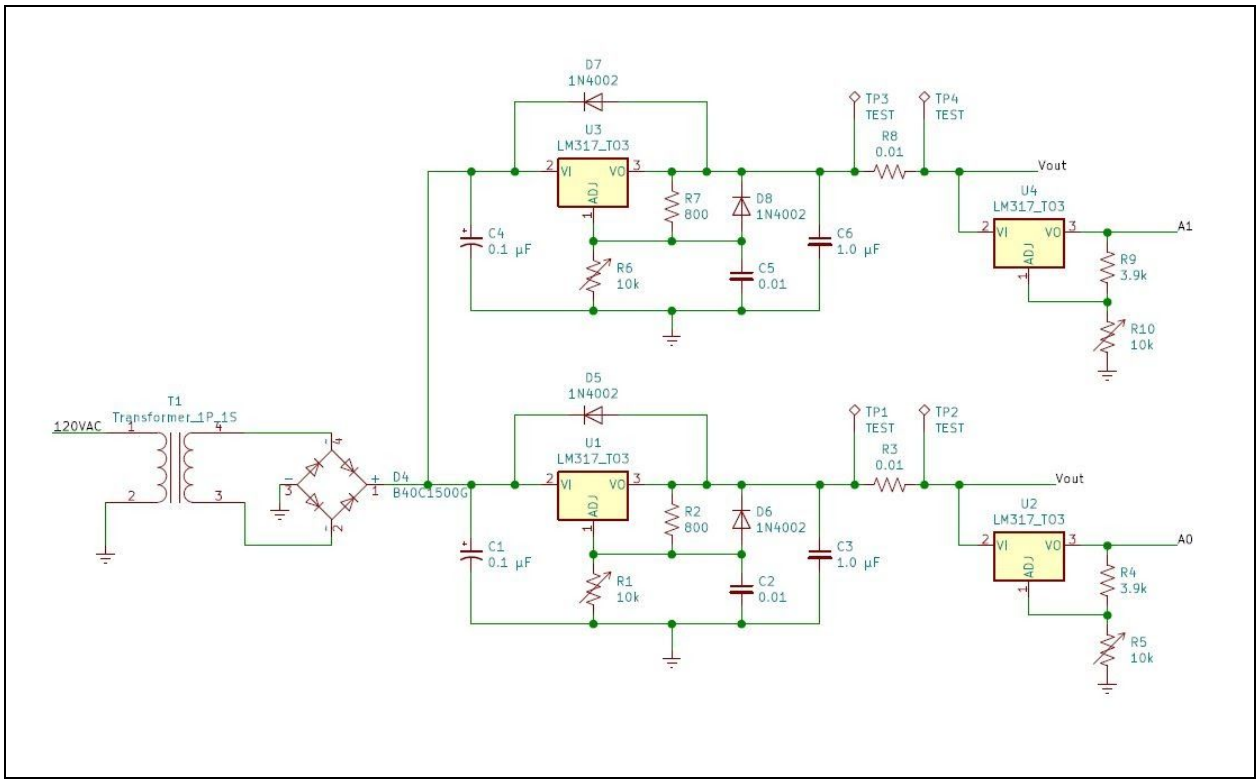

Figure 1: Full schematic of the two-channel linear power supply.

To use it, plug in the power supply into a 120VAC rated outlet. Afterwards, each channel has a pair of positive and negative leads that will be visible outside of the enclosure, where red is denoted positive and black is negative. Each channel can be connected to a device.

Electrical Specifications

- Output Voltage Range: 2 - 14V
- Output Current Range: 0 - 1.5A

The Android block consists of an Android smartphone application that will communicate with an Arduino microcontroller and constantly update the screen of the Android with voltage readings from the power supply. To interface with the application, make sure bluetooth is enabled on the smartphone and it is discoverable. Once the Arduino and the bluetooth module are active, the application will ask to pair itself with the bluetooth module. Accept this popup and the smartphone will be able to receive information coming from the channels. The application will continue updating voltage information until the application is closed, or if Bluetooth is disabled on the smartphone.