Color organ – by Kevin Shadle, Spring 2009

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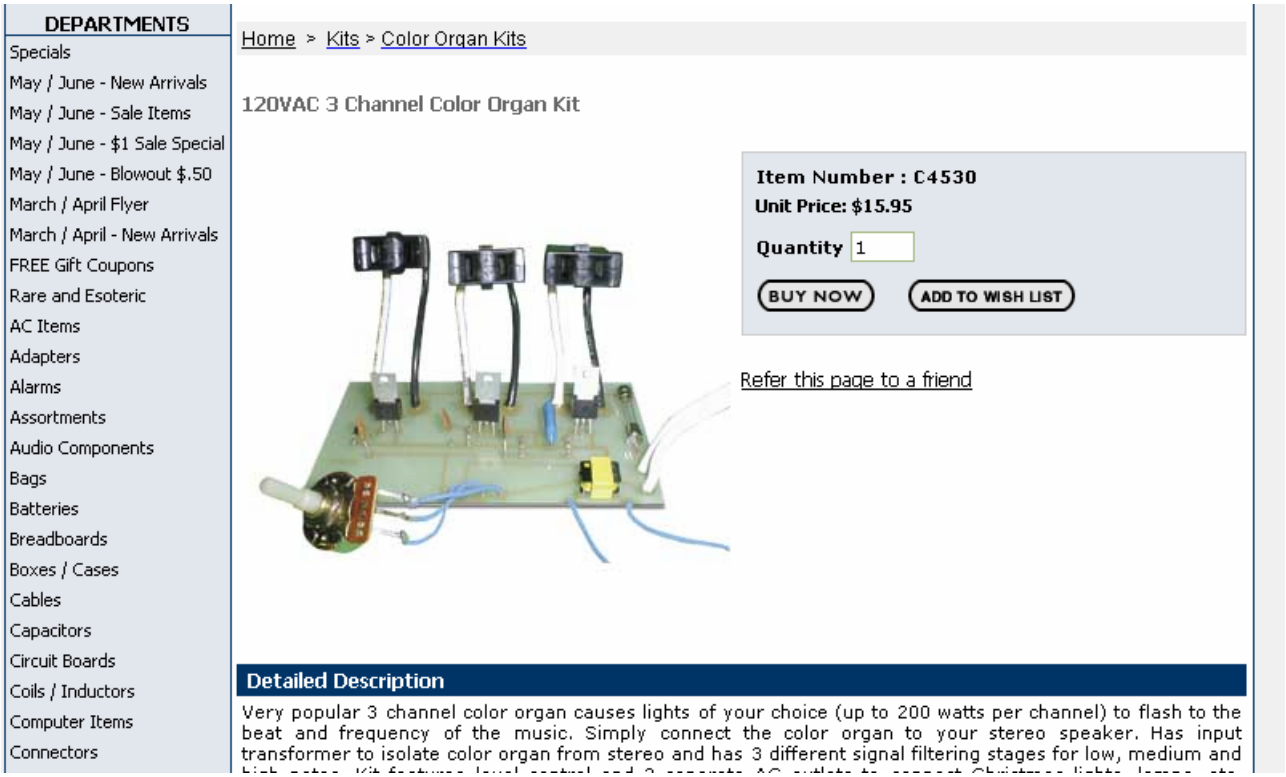
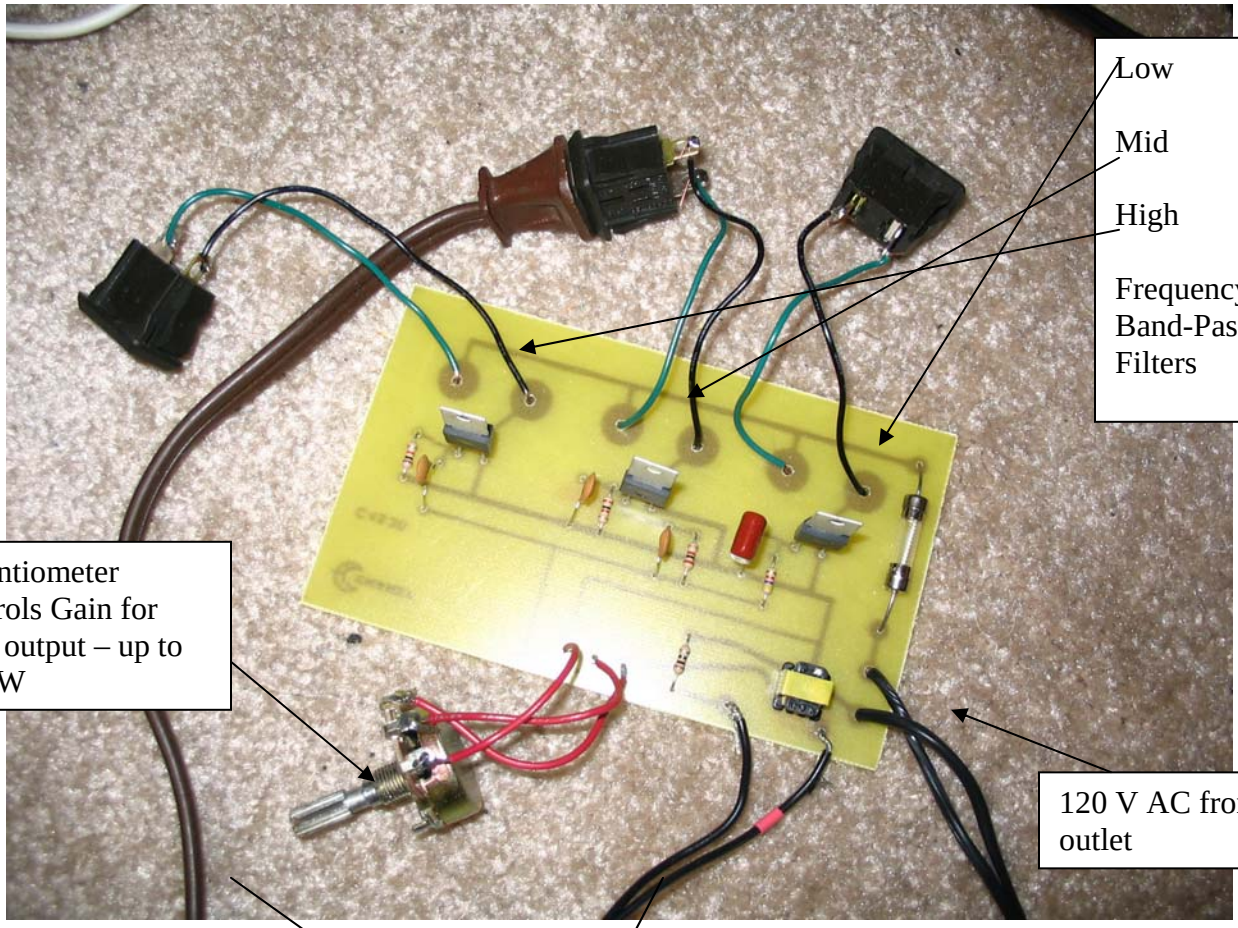
The term **color organ** refers to a tradition of mechanical (18th century), then electromechanical, devices built to represent sound or to accompany music in a visual medium—by any number of means. In the early 20th century, a silent color organ tradition (Lumia) developed. In the 60s and 70s, the term 'color organ' became popularly associated with electronic devices that responded to their music inputs with light shows. The term 'light organ' is increasingly being used for these devices; allowing 'color organ' to reassume its original meaning





Low

Mid

High

Frequency Band-Pass Filters

Potentiometer controls Gain for total output – up to 600 W

120 V AC from outlet

Audio Output from 1 channel of 4-spkr surround sound.

Blacklights (40W) total powered from mid-range audio frequency.

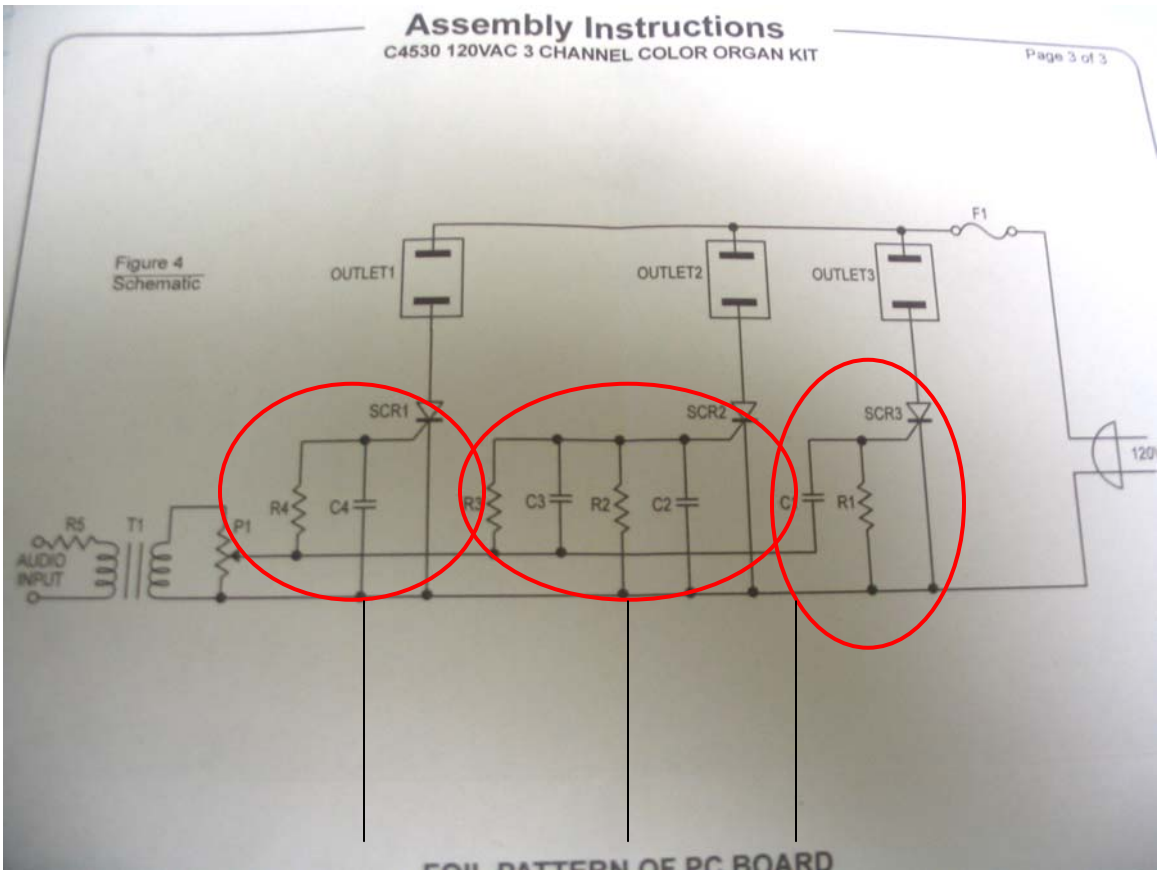
How this relates to course material:

The color organ has 3 different filters that allow a low (low pass filter), mid-range (band-pass filter), and high-range (high-pass filter) frequency to 3 different channels. The voltage at each of these channels can be connected to the positive and negative terminals of lights (I used blacklights), lamps, or anything with an AC drive.

A rotary potentiometer is also included in the kit, which adjusts the voltage connected to the input of the 3 channels to add sensitivity to the brightness of the lights. This voltage will be Vout = Vin (x/L) or (theta 1/theta 2) because it is angular displacement.

This demonstrates visually how the signal from an audio source (one channel from my surround sound system – which is another set of filters itself) can be filtered into 3 different categories (low, mid, and high) for the audible frequencies (100 Hz, 1000 Hz, 5000 Hz roughly). Also, the potentiometer shows how the gain can be adjusted equally to all three channels.

This is the **schematic** that came with the circuit board to show where to solder components.



As shown in the lecture slides, these are good examples of a low-pass, band-pass, and high pass filter from left to right. Note: the band-pass combines both low and high – showing 2 capacitors.