

**EK 210: Reverse Engineering**

# **HoMedics**

## **900 Dual Digital Scale**

**Prestige Worldwide:**

**Ali Nawaz, Zack Woo, Jerome Andaya,**

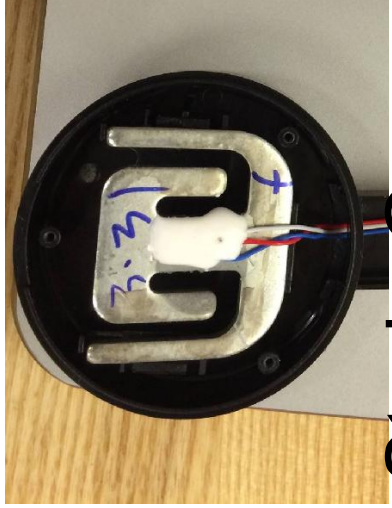
**Paroma Mallick, Ashlyn Aiello**

# Our Product

- 2 Displays
  - traditional dial (5.5")
  - LCD digital screen
- Weight Capacity: 400 lb.
- Measures 12.4" x 15.35"
- Powered by 3 AA batteries



# Primary Materials



Strain Gauge



Plate Glass

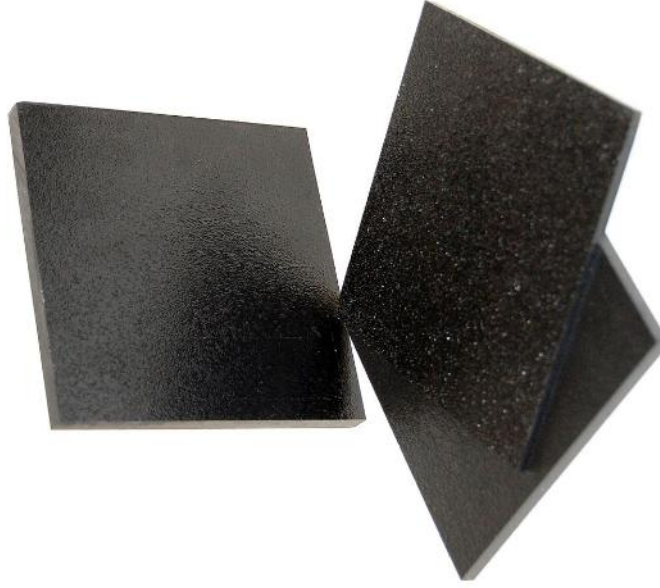


Display Face



Microprocessor

# Minor Materials



ABS  
Plastic

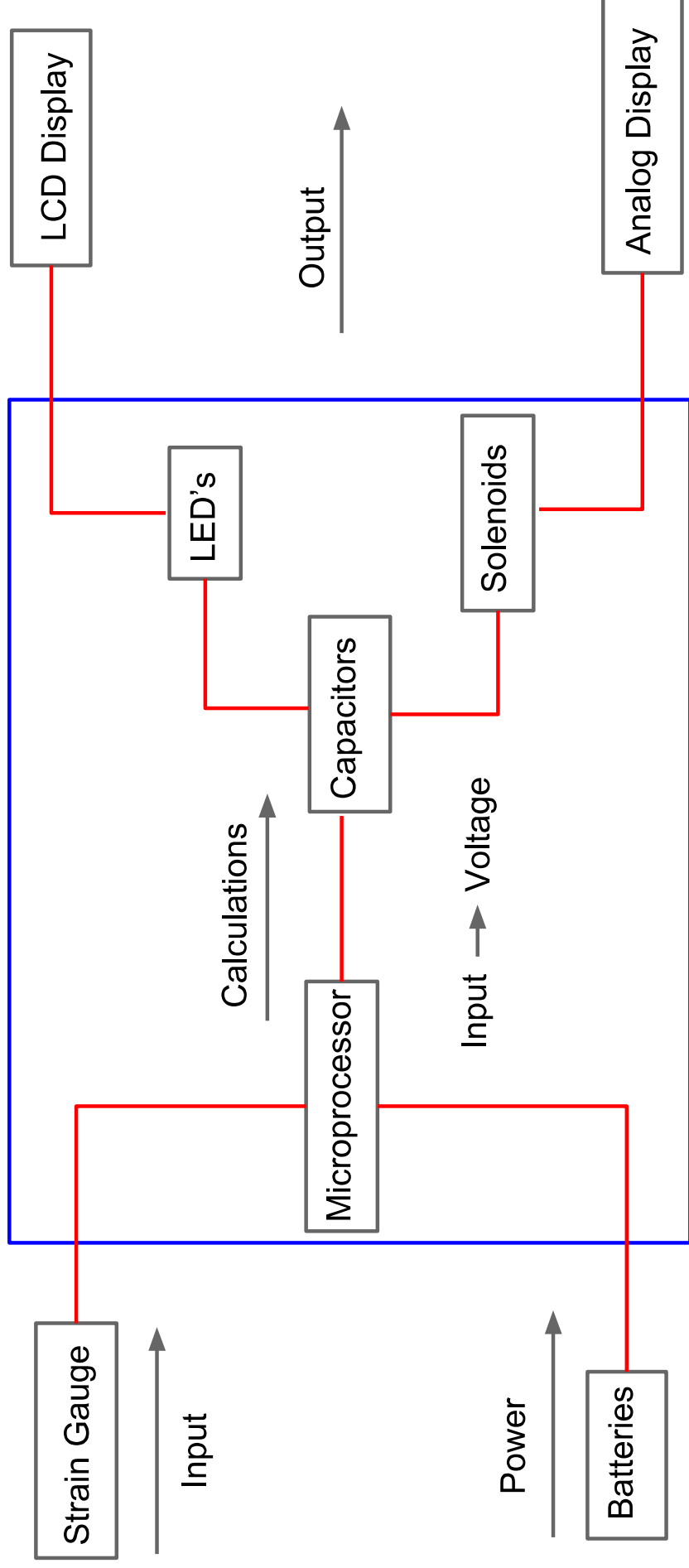


Variety of  
Screws

Wires



# Functional Analysis



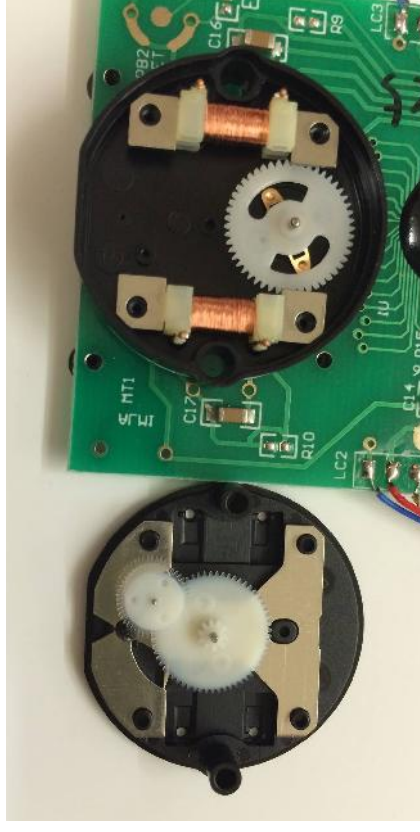
# Measuring Weight

- 4 strain gauges
- Ohm's Law,  $V=IR$
- resistance change  
creates current
- average of weights



# Displaying Weight - Analog Dial

- Microprocessor calculates distribution of voltage from capacitor
- Voltage flows through two solenoids, creates magnetic field
- Dial turns due to magnetic force on gear

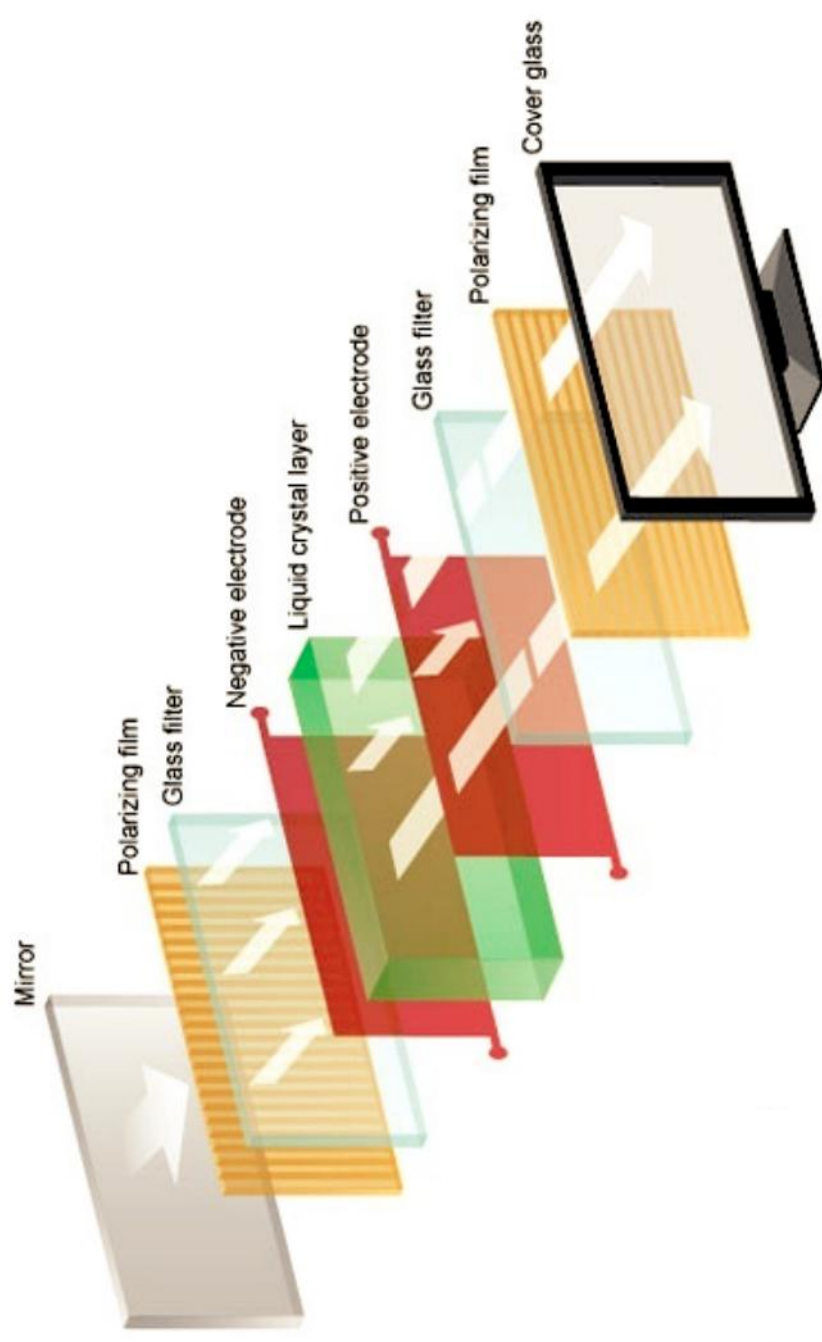




# Displaying Weight - LCD Screen



HoMedics 900 LCD screen





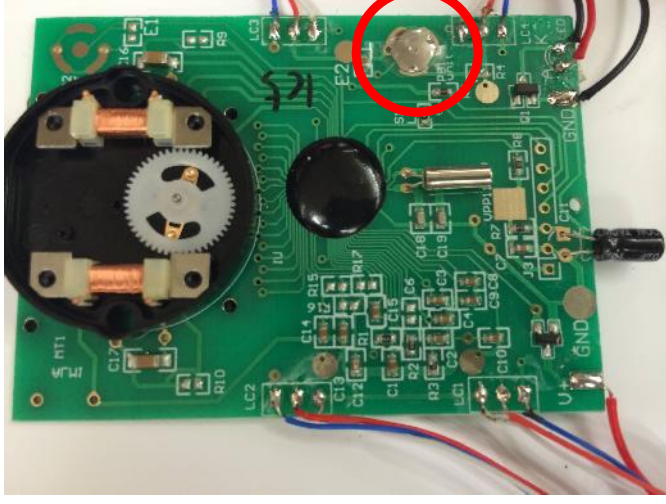
# Displaying Weight - LCD Screen

## Major Points:

- polarized light is unidirectional
- liquid crystals rotate plane of light
- pixels are on by default

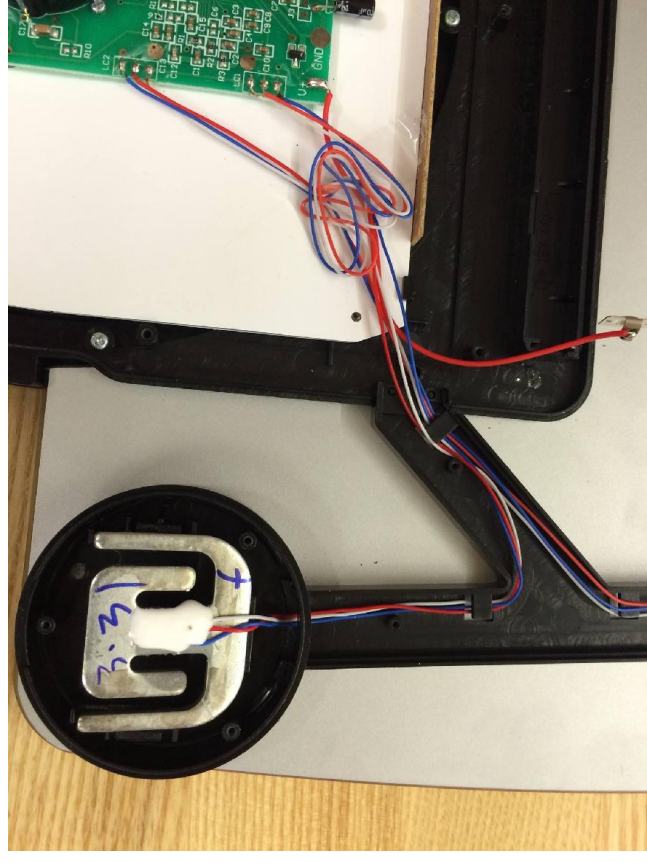
# Additional Function - Unit Change

- button toggles “on” or “off”
- microprocessor programmed to operate differently for “on” state and “off” state



# Evaluation of Product Design: Manufacturing Perspective

- Pros
  - Clips for wires
  - Pads clip onto sensors
  - Y-shaped sides
- Cons
  - Hidden screw behind sticker
  - Dial gears are hard to place
  - Varying screws



# Evaluation of Product Design: User Experience



**The product is of great use; has large numbers.**

I am very pleased with the Homedics 900 bath scale. It has large numbers so that older folks are able to read it easily and the platform is very easy to step on the scale. Very happy with my new bathroom scale.

**Yes, I recommend this product.**

August 24, 2015

**GRANDMA**

From Stanhope USA

- 2 displays- easy to use/ trust
- Aesthetically pleasing
- Easy to store (thin, lightweight)

# Image Sources

[http://jle.ie/wp-content/uploads/2012/11/JLE\\_Wiring\\_Electricity-3.jpg](http://jle.ie/wp-content/uploads/2012/11/JLE_Wiring_Electricity-3.jpg)

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