Supplemental Data

Electrode Design

The complete electrode design consists of four layers: (1) aluminum foil disk, (2) 3D printed PLA insulator disk, (3) aluminum foil disk, and (4) 3D printed PLA shield. The aluminum foil and the 3D printed PLA insulator disk (**Figure 5**) had a diameter of 28.00mm. The dimensions of the shield are shown below.

The shield (**Figure 6**) is grounded via a common ground (connected to the outer ring) and serves to eliminate environmental noise picked up by the capacitive touch sensor.

Figure 5: Electrode Layer (2) – 3D Printed PLA Insulator

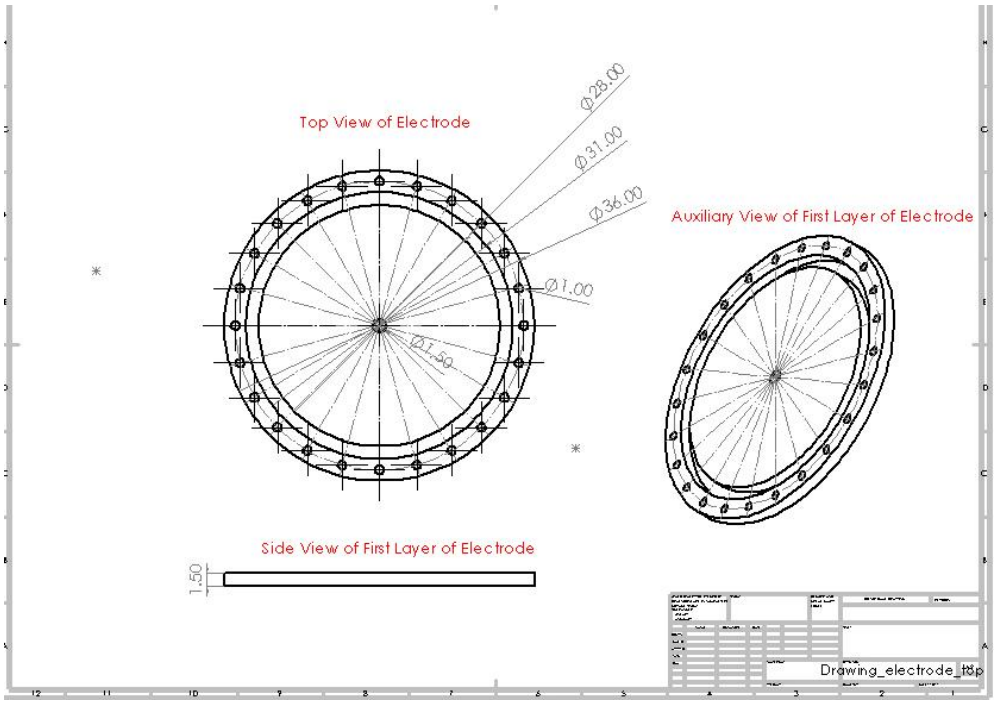
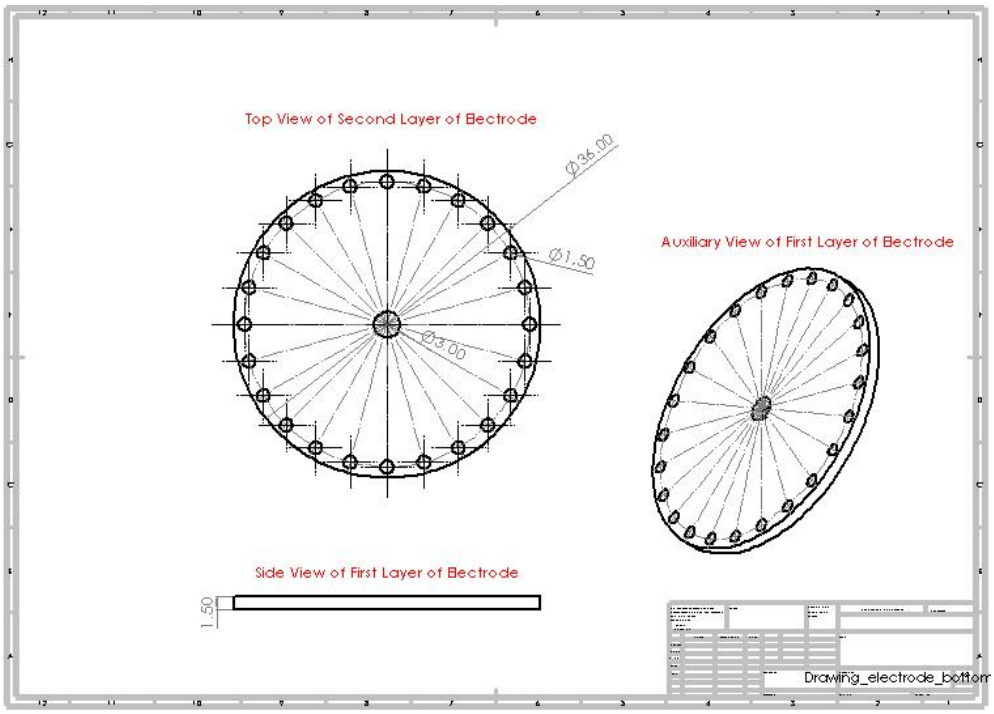


Figure 6: Electrode Layer (4) – 3D Printed PLA Shield



The electrode can be created by layering the four components on top of one another (preferably glued). The outer most aluminum foil disk (1) will be the primary contact for the user. Note, more layers of aluminum foil disks and 3D printed PLA insulator disks can be added to create more sensitive capacitive touch sensors.

PCB Designs

The layout of the components within the 3D printed encapsulation can be divided into three layers:

a) Top layer: button, LCD screen, On/Off switch (**Figure 8**)
b) Middle layer: OpenLog, RTC, Heart Rate Monitor (**Figure 9**)
c) Bottom layer: Arduino

The top and middle layer will require separate PCB printed boards to ensure components are properly connected and sturdy. See **Figures 8 and 9** below for the PCB design layouts.

Figure 8: Top Layer PCB Design

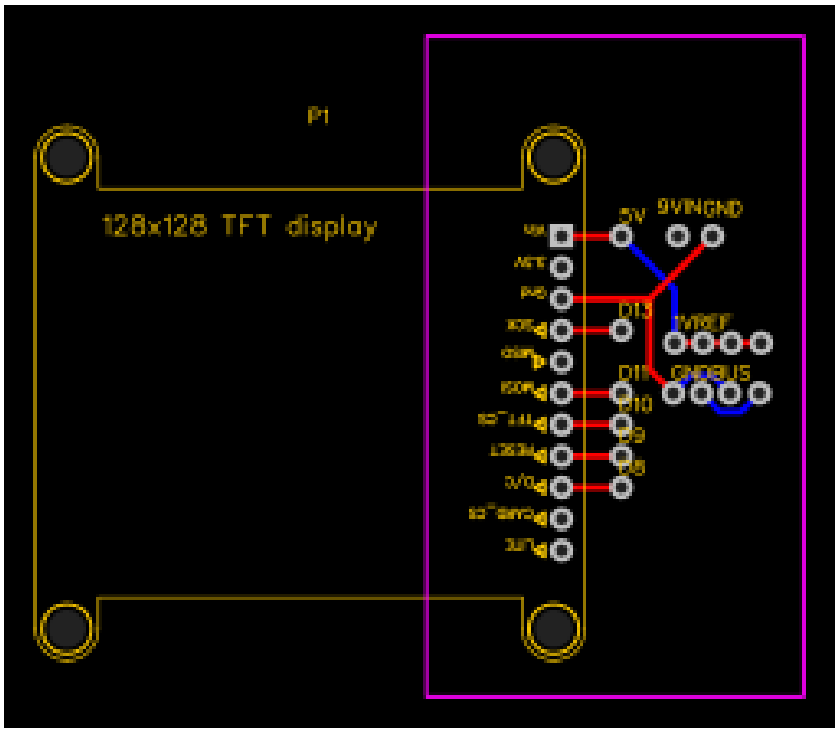


Figure 9: Middle Layer PCB Design